

LINK PP16.ASM

PAINTER POWER ADVANCED - PP-16.652 - JUNE 11, 1981
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" Shall it ever carry the spirit of Channel Fifty Million "

HARDWARE TOGGLES

= C054 PRIMPG: EQU \$C054 ;DISPLAY PRIMARY PAGE
= C055 SECPG: EQU \$C055 ;DISPLAY 2ND PAGE
= C051 TXTDSP: EQU \$C051 ;DISPLAY TEXT
= C057 DHIRES: EQU \$C057 ;DISPLAY HIRES GRAPHICS
= C050 DGRAPH: EQU \$C050 ;DISPLAY GRAPHICS
= C030 SPEAK: EQU \$C030 ;APPLE SPEAKER

APPLE SOFTWARE INTERFACE

= 0024 CURSRX: EQU \$24 ;TEXT CURSOR POSITION
= 0025 CURSRY: EQU \$25 ;TEXT CURSOR POSITION
= FB1E PREAD: EQU \$FB1E ;READ PADDLE
= FDF0 COUT1: EQU \$FDF0 ;OUTPUT CHAR TO SCREEN
= FCA8 ADELAY: EQU \$FCA8 ;APPLE DELAY ROUTINE
= FF4A IOSAVE: EQU \$FF4A ;SAVE 6502 REGISTERS
= FF3F IOREST: EQU \$FF3F ;RESTORE 6502 REGISTERS
= FE84 SETNRM: EQU \$FE84 ;SET NORMAL TEXT MODE
= FC22 CURSET: EQU \$FC22 ;SET CURSOR POSITION (COMPUTE BASL/H)
= 0028 BASL: EQU \$28 ;BASE ADDRESS OF CURSOR POSITION
= 0029 BASH: EQU \$29 ;BASE ADDRESS OF CURSOR POSITION

PAGE ZERO DEFINITIONS

= 0060 FROM: EQU \$60 ;FROM LOCATION FOR COPYING
= 0062 TO: EQU \$62 ;TO LOCATION FOR COPYING
= 0064 CPAGE1: EQU \$64 ;BEGINNING LOC OF TEXT LINES 20 & 21.
= 0066 CPAGE2: EQU \$66 ;BEGINNING LOC OF TEXT LINES 22 & 23.
= 0068 TBASEX: EQU \$68 ;TARGET PATTERN BASE - X VALUES
= 006A TBASEY: EQU \$6A ;TARGET PATTERN BASE - Y VALUES
= 006C SBASEX: EQU \$6C ;SOURCE PATTERN BASE - X VALUES
= 006E SBASEY: EQU \$6E ;SOURCE PATTERN BASE - Y VALUES
= 0070 CBASEX: EQU \$70 ;CURRENTLY DISPLAYED PATTERN BASE - X VALUES
= 0072 CBASEY: EQU \$72 ;CURRENTLY DISPLAYED PATTERN BASE - Y VALUES
= 0074 BBASEX: EQU \$74 ;STROKE BUFFER
= 0076 BBASEY: EQU \$76 ;STROKE BUFFER

; SPECIAL MEMORY LOCATIONS

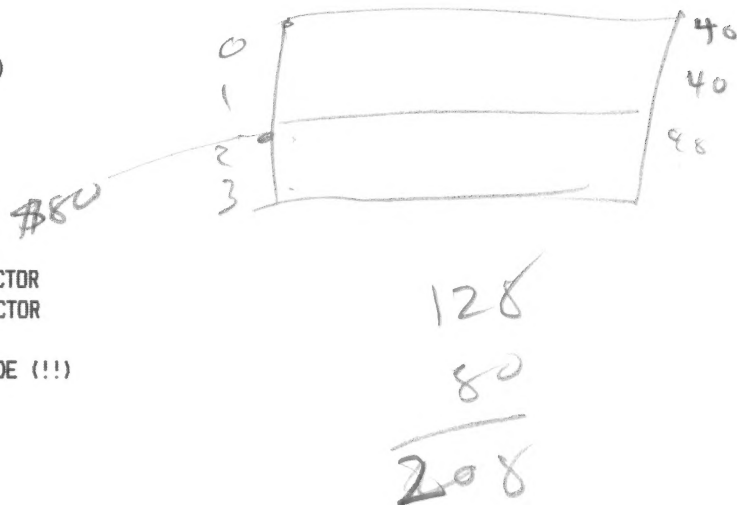
= 03E8 REGS: EQU \$03E8 ;LAST \$18 LOCATIONS OF PAGE 3 ARE USED TO
 ;HOLD ZERO PAGE STUFF WHILE WE MESS AROUND.

; MEMORY OFFSET VALUES (FROM CPAGE 1/2) FOR CONTROL DISPLAY.

= 0000 TXLIN1 EQU \$00
 = 0080 TXLIN2 EQU \$80
 ;
 = 0001 TXUSD EQU TXLIN1+01 ;DISP BEING USED
 = 000C TXBSE EQU TXLIN1+12 ;CURRENT BASE
 = 001C TSTS2 EQU TXLIN1+28 ;SIZE OF TARGET PATTERN BEING USED
 = 0025 TXSS2 EQU TXLIN1+37 ;SIZE OF SOURC PATTERN BEING USED
 = 008A TXVER EQU TXLIN2+10 ;VISUALIZE MODE
 = 0094 TXLOC EQU TXLIN2+20 ;LOCATE MODE
 = 009E TXFREZ EQU TXLIN2+30 ;FREEZE FLAG
 = 00A7 TXPNT EQU TXLIN2+39 ;PAINT MODE (MASTER)
 = 000A TXGST EQU TXLIN1+10 ;QUICKSTROKE MODE
 = 0014 TXHLDX EQU TXLIN1+20 ;HOLD X FLAG
 = 0016 TXHLDY EQU TXLIN1+22 ;HOLD Y FLAG
 = 001E TXCOLR EQU TXLIN1+30 ;CURRENT COLOR
 = 0027 TXDRWF EQU TXLIN1+39 ;DRAW ENABLE FLAG
 = 008A TXWRP EQU TXLIN2+10 ;WRAPAROUND FLAG
 = 0094 TXNEGX EQU TXLIN2+20 ;NEGATE SOURCE X VECTOR
 = 0096 TXNEGY EQU TXLIN2+22 ;NEGATE SOURCE Y VECTOR
 = 009E TXMODE EQU TXLIN2+30 ;MAKE/DRAW MODE FLAG
 = 00A7 TXPNM EQU TXLIN2+39 ;PAINT APPLICATION MODE (!!)

0000 = 0C00 ORG \$C00

; BEGIN: CLD ;SET BIN MODE
 0C01 AD6A1F LDA INIFLG ;ALREADY INITIALIZED?
 0C04 D001 ^0C07 BNE DOINI ;NOPE
 0C06 60 RTS
 0C07 205B64 DOINI: JSR SAVREG ;SAVE ZERO PAGE LOCATIONS
 0C0A A900 LDA #0 ;CLEAR ERASE FLAG
 0C0C 8D301F STA ERSFLG
 0C0F 8D801F STA HITTP ;SET HIT TYPE = EXTERNAL SO WE CAN GET AWAY
 ;WITH ALL SORTS OF MONKEY BUSINESS.
 0C12 8D841F STA KBFRCH ;CLEAR FREEZE REINSTATE FLAG
 0C15 8D851F STA GSTXED ;CLEAR EXECUTING QUICKSTROKE FLAG
 0C18 8D541F STA CUMODE ;START OFF IN MASTER MODE
 0C1B 8D9C1F STA SCSTRY+1 ;CLEAR OFF THE SCREEN BITS
 0C1E 8D9A1F STA SCSTRX+1 ;FOR X/Y STARTING POINTS (10 BIT REGS)
 0C21 8D911F STA TBSPTR ;SET BASE POINTERS FOR BRUSH & QUICKSTROKE
 0C24 8D921F STA BSPTR ;BUFFERS TO BEGINNING OF PATTERN
 0C27 A27F LDX #127
 0C29 8C5D1F STY CSTRTX ;START 'EM AT CENTER OF SCREEN
 0C2C 8C991F STY SCSTRX
 0C2F A240 LDX #64
 0C31 8C5E1F STY CSTRTY



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0C34 8C9B1F      STY      SCSTRY
0C37 20C417      JSR      6PAGE1      ;SET UP POINTERS TO CTL DISPLAY
0C3A 20041A      JSR      WRTEXT      ;WRITE TEXT AS TXTFLG ALLOWS
;
; NOW WE HAVE TO GET OPERATIONAL BY FORCING THE SETTING OF THE VARIOUS
; FLAGS ONE WAY OR THE OTHER. THEN WE CAN RETURN TO CALLER.
;
0C3D A901        LDA      #1          ;SET PAINTING MODE TO NORMAL
0C3F 200A16      JSR      PNMHIT
0C42 209110      JSR      FRZON      ;PUT FREEZE ON
0C45 A94E        LDA      #'N'      ;TARGET SIZING MODE = NORMAL
0C47 8D3E1F      STA      XCHAR1
0C4A 202113      JSR      TRGMDE
0C4D A94E        LDA      #'N'      ;STROKE SIZING MODE = NORMAL
0C4F 8D3E1F      STA      XCHAR1
0C52 205D13      JSR      SRCMDE
0C55 20F30F      JSR      RABBIT      ;START WITH SPEED 5
0C58 A94B        LDA      #'K'      ;COLOR SELECTION IS BY KB
0C5A 8D3E1F      STA      XCHAR1
0C5D 205B0F      JSR      COLMDE
0C60 A933        LDA      #'3'      ;START W/ WHITE BKGND
0C62 8D3E1F      STA      XCHAR1
0C65 200D10      JSR      CHBKND
0C68 A906        LDA      #6        ;SET PAINT COLOR TO BLACK
0C6A 20790F      JSR      COLCHG
0C6D A931        LDA      #'1'      ;BRUSH #1
0C6F 8D5A1F      STA      CTARG
0C72 A950        LDA      #'P'      ;STROKE = PADDLES
0C74 8D5C1F      STA      CSOURC
0C77 207E17      JSR      RSET1      ;SET UP TARGET, SOURCE & STROKE BUFFERS
0C7A A209        LDX      #9        ;NOW CHECK ALL 9 PATTERNS TO MAKE SURE
0C7C ADA71F      LDA      APATTS      ;THERE ARE NONE W/O POINTS. IF WE FIND
0C7F 8560        STA      FROM      ;ANY, THEN CHANGE # POINTS TO 20.
0C81 ADA81F      LDA      APATTS+1
0C84 8561        STA      FROM+1
0C86 A0FF        LDY      #$FF
0C88 B160        INPLOP: LDA      [FROM],Y
0C8A D004 ^0C90  BNE      INPLOK
0C8C A914        LDA      #20
0C8E 9160        STA      [FROM],Y
0C90 E661        INPLOK: INC      FROM+1      ;SKIP TO NEXT PATTERN BUFFER
0C92 E661        INC      FROM+1
0C94 CA         DEX
0C95 D0F1 ^0C88  BNE      INPLOP
0C97 207312      JSR      XTRNOF      ;X & Y HOLD OFF
0C9A 208912      JSR      YTRNOF
0C9D 208010      JSR      DTRNOF      ;TURN BRUSH OFF (LIFT)
0CA0 206710      JSR      DRAWNW      ;TURN MAKE MODE OFF
0CA3 202911      JSR      QSTOFF      ;QUICK STROKE OFF
0CA6 20C712      JSR      XNEGOF      ;NEGATE X & Y OFF
0CA9 200D13      JSR      YNEGOF
0CAC 204A11      JSR      LOCOFF      ;LOCATE MODE OFF
0CAF 20D710      JSR      VEROFF      ;VISUALIZE MODE OFF
0CB2 20EA10      JSR      WRPON      ;WRAPAROUND OFF
0CB5 20BF10      JSR      PNPNOF      ;TURN PAINT OFF (BRUSH ON - MONITOR)

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0CB8 A231          LDX      #'1'
0CBA 8A           TABLOP: TXA
0CBB 48           PHA
0CBC 8D3E1F        STA      XCHAR1      ;ASCII CHAR TYPED
0CBF 290F          AND      #$0F
0CC1 8D3F1F        STA      XCHAR2      ;COLOR NUMBER
0CC4 20BA0F        JSR      COLTAB
0CC7 68           PLA
0CC8 AA           TAX
0CC9 E8           INX
0CCA C938          CMP      #'8'
0CCC D0EC ^0CBA    BNE      TABLOP
0CCE A900          LDA      #0
0CD0 8D6A1F        STA      INIFLG      ;WE'RE OFF AND RUNNING !
0CD3 20D316        JSR      DOFLGS      ;DISPLAY FLAGS IN CTL DISPLAY
0CD6 206D64        JSR      RSTREG
0CD9 60           RTS      ;INITIALIZATION COMPLETE

;
;
;
0CDA 206E1C        COMAND: JSR      LSTERA
0CDD 20D710        JSR      VEROFF      ;TURN VERIFY OFF
0CE0 20BF10        JSR      PNPNOF      ;TURN PAINT OFF
0CE3 208010        JSR      DTRNOF      ;TURN BRUSH OFF
0CE6 209110        JSR      FRZON      ;TURN FREEZE ON
0CE9 A901          LDA      #$1        ;LOAD UP REMOTE CONTROL COUNTERS SO THAT WE
0CEB 8D011F        STA      RENTMP      ;AUTOMATICALLY EXIT TO CALLING PROGRAM WHEN
0CEE 8D611F        STA      HCOUNT    ;MAKE SURE EXIT IS TIMELY
0CF1 A900          LDA      #0
0CF3 8D021F        STA      RCTR1      ;THE COUNTERS ARE CHECKED AT NOHIT:
0CF6 8D031F        STA      RCTR2      ;REENTRY WILL BE THRU REENT.
0CF9 8D041F        STA      RCTR3
0CFC 60           RTS

;
0CFD AD           DB      $AD ;==FLAK
;
;
;   REENT - COME HERE WHEN COMING BACK FROM BASIC
;   ASSUMPTION IS THAT HI-RES SCREENS ARE STILL INTACT.
;
0CFE 205B64        REENT: JSR      SAVREG
0D01 206217        JSR      RSETUP      ;SET THINGS UP TO BE THE WAY THEY WERE
0D04 4C490D        JMP      LOOP      ;BEFORE WE WENT TO COMMAND MODE.

;
;   AND HERE WE GO
;
;
;   =====
;   EXTERNAL CALLS
;   =====
;
;   EXTCAL - PROCESS A SOFTWARE KB HIT
;   -----
;
0D07 205B64        EXTCAL: JSR      SAVREG      ;THIS IS A CALL FROM THE OUTSIDE WORLD
0D0A AD3D1F        LDA      TMPNUM      ;GET CHARACTER AS IF HIT FROM KB
0D0D 48           PHA

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000E 207E17      JSR      RSET1      ;ESTABLISH 0 PAGE LOCATIONS USED
0011 68          PLA
0012 20190D      JSR      EXTCL1
0015 206D64      JSR      RSTREG      ;RESTORE REGISTERS
0018 60          RTS

;
0019 297F      EXTCL1: AND      #$7F      ;HACK OUT PARITY BIT
001B 8D3D1F      STA      TMPNUM
001E 8D7E1F      STA      TEMP
0021 48          PHA
0022 A900      LDA      #0
0024 8D801F      STA      HITTP      ;HIT TYPE = EXTERNAL (NOT KB)
0027 68          PLA
0028 20840D      JSR      STILUS      ;PROCESS IT
002B 60          RTS

;
;      MLTCAL - EXTERNAL REQUEST W/MULTIPLE KB HITS
;
;
002C 205B64      MLTCAL: JSR      SAVREG
002F 207E17      JSR      RSET1      ;SET UP 0 PAGE LOCATIONS
0032 A000      LDY      #0
0034 98          EXTLOP: TYA
0035 48          PHA      ;SAVE CURRENT POINTER TO EXTERNAL KB HIT
0036 B90078      LDA      EXTTBL,Y      ;GET KB HIT
0039 F009 ^0D44  BEQ      DONEXT      ;0 IS END MARKER
003B 20190D      JSR      EXTCL1      ;PROCESS IT
003E 68          PLA
003F A8          TAY
0040 C8          INY      ;POINT TO NEXT CHAR
0041 4C340D      JMP      EXTLOP
0044 68          DONEXT: PLA
0045 206D64      JSR      RSTREG
0048 60          RTS

;
;      =====
;      MAIN PROGRAM LOOP
;      =====
;
0049 A900      LOOP:  LDA      #0      ;SET CHR HIT SUCH THAT CALLING ROUTINE WILL
004B 8D401F      STA      CHR HIT      ;TELL IT FROM ASCII CHAR IN CASE WE TIME OUT.
004E 8D801F      STA      HITTP      ;SET HIT TYPE = EXTERNAL
0051 AD00C0      LDA      $C000      ;KB HIT?
0054 104B ^0DA1  BPL      NOHIT      ;NOPE
0056 205C0D      JSR      YESHIT      ;PROCESS IT
0059 4CA10D      JMP      NOHIT

;
005C 297F      YESHIT: AND      #$7F      ;CAN THE PARITY BIT
005E 8D3D1F      STA      TMPNUM      ;KEEP DA CHAR
0061 8D7E1F      STA      TEMP      ;KEEP IT HERE, TOO
0064 8D401F      STA      CHR HIT      ;SAVE FOR EXTERNAL CALLER
0067 AD10C0      LDA      $C010      ;KILL KB FLAG
006A AD851F      LDA      QSTXEQ      ;DURING EXECUTION OF A QUICKSTROKE, IGNORE
006D F003 ^0D72  BEQ      YESOK      ;ALL KB HITS
006F 4C490D      JMP      LOOP
0072 20D864      YESOK: JSR      SOUND2      ;ACKNOWLEDGE HIT WITH 'BIP'

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0075 EE801F      INC      HITTP      ;SET HIT TYPE = KB
0078 AD811F      LDA      HITFLG     ;HOW ARE WE SUPPOSED TO RESPOND?
007B 3020 ^0D9D  BMI      NOACT      ;IGNORE ALL KB HITS.
007D F005 ^0D84  BEQ      STILUS     ;RESPOND NORMALLY
007F A90D        LDA      #$0D       ;RETURN TO USER - FAKE A CARRIAGE RETURN
0081 8D7E1F      STA      TEMP
0084 AD7E1F      STILUS: LDA      TEMP ;GET CHARACTER BACK
0087 E961        SBC      #$61       ;SUBTRACT 97 DECIMAL
0089 3003 ^0D8E  BMI      SM97
008B 4C9D0D      JMP      NOACT      ;IGNORE > 96
008E AD7E1F      SM97:  LDA      TEMP ;ADD TWICE TO
0091 6D7E1F      ADC      TEMP       ;OFFSET INTO ADDRESS TABLE
0094 8D9F0D      STA      JMPLO      ;STORE OFFSET
0097 AD3D1F      LDA      TMPNUM     ;GET BACK A SINGLE COPY
009A 209E0D      JSR      JMPIND     ;MAKE IT INTO SUBROUTINE
;
;
;INDIVIDUAL SUBROUTINES' RETURNS WILL
;GET CONTROL BACK HERE
;RETURN FROM HIT PROCESSING
009D 60          NOACT: RTS
;
;
009E 6C          JMPIND: DB $6C ;JMP INDIRECT
009F 0063        JMPLO DW JMPTBL
;
00A1 CE611F      NOHIT: DEC      HCOUNT ;SEE IF IT'S TIME TO DRAW/ENTER YET
00A4 CEF1F      DEC      CCOUNT      ;OUR PADDLE READ INDICATOR
00A7 AD5F1F      LDA      CCOUNT
00AA 2903        AND      #3         ;SET TO READ PADDLE 0-3.
00AC 20D417      JSR      GETPAD      ;READ PADDLES & SCALE
00AF 200618      JSR      APLOC       ;APPLY LOCALLY
00B2 20C918      JSR      GETVEC      ;APPLY TO REGISTERS & INTEGRATE W/STUFF FROM
;PRIOR KB HITS, COMING OUT WITH BUSEX, BUSEY.
00B5 206519      JSR      SAVVEC      ;SAVE VECTOR IN STROKE BUFFER IF IN VERIFY.
;GET VECTOR FROM STROKE BUFFER IF DOING A QUICK
;OTHERWISE JUST PASS ON BUSEX & BUSEY.

00B8 AD611F      LDA      HCOUNT
00BB F01B ^0DD8  BEQ      CNTOVR      ;COUNT IS UP
00BD AD7F1F      LFRZ0: LDA      CHGFLG ;ANY CHANGES FROM LAST TIME?
00C0 F003 ^0DC5  BEQ      NOCHG0      ;NOPE
00C2 206E1C      JSR      LSTERA      ;YES, WE HAVE TO ERASE
00C5 AD301F      NOCHG0: LDA      ERSFLG ;IF ERASE FLAG ON, THEN LEAVE IT UP THERE.
00C8 3003 ^0DCD  BMI      RELOPY
00CA 20CA1C      JSR      DRAWIT      ;PUT IT UP THERE IN NEW FORM.
00CD A900        RELOPY: LDA      #0   ;CLEAR CHANGE FLAG
00CF 8D7F1F      STA      CHGFLG
00D2 20121B      JSR      BASDSP
00D5 4C490D      JMP      LOOP
;
00D8 AD601F      CNTOVR: LDA      CURCNT ;RESTORE COUNTER
00DB 8D611F      STA      HCOUNT
00DE AD851F      LDA      GSTXEQ      ;EXECUTING QUICKSTROKE?
00E1 D02E ^0E11  BNE      LPOK        ;IF SO, DON'T DECR OR CHECK COUNTERS
00E3 AD011F      LDA      REMTMP      ;UNDER REMOTE CONTROL OR MAKING EXIT?
00E6 F01F ^0E07  BEQ      NOREM      ;NOPE
00E8 AD041F      LDA      RCTR3
00EB D017 ^0E04  BNE      DECR3

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0DED AD031F      LDA      RCTR2
0DF0 D00F ^0E01  BNE      DECR2
0DF2 AD021F      LDA      RCTR1
0DF5 D007 ^0DFE  BNE      DECR1
0DF7 206E1C      JSR      LSTERA      ;ERASE LAST BEFORE LEAVING
0DFA 206D64      JSR      RSTREG     ;COUNTERS ARE EXHAUSTED, LET'S RETURN
0DFD 60          RTS

;
0DFE CE021F      DECR1: DEC      RCTR1
0E01 CE031F      DECR2: DEC      RCTR2
0E04 CE041F      DECR3: DEC      RCTR3
0E07 AD891F      NOREM: LDA      ORGFL6      ;GOING BACK TO ORIGIN (ENTER)?
0E0A D005 ^0E11  BNE      LPOK
0E0C AD671F      LDA      FRZFL6
0E0F 10AC ^0DBD  BPL      LFRZ0      ;WE'RE FROZEN, GO NO FURTHER.
0E11 EE071F      LPOK: INC      TCTR3
0E14 D008 ^0E1E  BNE      NORREM
0E16 EE061F      INC      TCTR2
0E19 D003 ^0E1E  BNE      NORREM
0E1B EE051F      INC      TCTR1

;
0E1E AD851F      NORREM: LDA      QSTXEQ      ;IF WE'RE DOING A QSTROKE, BRANCH ACCORDING TO
0E21 F007 ^0E2A  BEQ      LPNGST      ;WHETHER WE'RE ENTERING OR MOVING.
0E23 AD691F      MECHEK: LDA      MEFLAG
0E26 102B ^0E53  BPL      ENTER      ;ENTERING
0E28 D017 ^0E41  BNE      ADDVEC      ;MOVING
0E2A AD891F      LPNGST: LDA      ORGFL6      ;IF RE-ORIGINATING IN ENTER.
0E2D D024 ^0E53  BNE      ENTER
0E2F AD6D1F      LDA      VISFL6      ;VISUALIZING?
0E32 3008 ^0E3C  BMI      LPNTVI      ;NO
0E34 AD6B1F      LDA      LOCFL6      ;IS LOCATE ALSO ON? IF SO, THEN WE WANT TO MOVE
0E37 1008 ^0E41  BPL      ADDVEC      ;AS OPPOSED TO JUST DRAWING THE STROKE.
0E39 4CC70E      JMP      DRAWER      ;JUST DRAW IT.
0E3C AD691F      LPNTVI: LDA      MEFLAG
0E3F 1012 ^0E53  BPL      ENTER

;
0E41 AD441F      ADDVEC: LDA      USEX
0E44 8D3B1F      STA      TEMPX
0E47 AD451F      LDA      USEY
0E4A 8D3C1F      STA      TEMPY
0E4D 208A16      JSR      MOVSTT      ;MOVE STARTING POINT BY (TEMPX,TEMPY)
0E50 4CC70E      JMP      DRAWER
0E53 AD441F      ENTER: LDA      USEX      ;DON'T ALLOW 'EM TO ENTER (0,0)
0E56 0D451F      ORA      USEY
0E59 F06C ^0EC7  BEQ      DRAWER
0E5B 206E1C      JSR      LSTERA      ;ERASE IF SUPPOSED TO
0E5E AC571F      LDY      TPTR
0E61 F007 ^0E6A  BEQ      ENTNOK      ;SEE IF WE'RE STARTING/BACK TO 0 PTS.
0E63 CC2A1F      CPY      MAXPTS
0E66 F012 ^0E7A  BEQ      IZOKAY
0E68 9010 ^0E7A  BCC      IZOKAY
0E6A AD6B1F      ENTNOK: LDA      LOCFL6      ;AVOID MANY Bleeps IF IN LOCATE
0E6D 100B ^0E7A  BPL      IZOKAY
0E6F 207B14      JSR      ESORGE      ;REESTABLISH PATTERN ORIGIN
0E72 A000      LDY      #0          ;MAX PATTERN LENGTH EXCEEDED, START OVER

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0E74 8C571F      STY      TPTR
0E77 8C911F      STY      TBSPTR
0E7A AE441F      IZOKAY: LDX      USEX
0E7D AD6B1F      LDA      LOCFLG      ;WE HAVE TO SEE IF WE'RE 'L'OCATING NEXT PT.
0E80 3012 ^0E94   BMI      ENTNAD      ;NOPE
0E82 AD451F      LDA      USEY      ;GET Y VECTOR
0E85 88          DEY      ;BACK UP TO WHAT IS LAST VECTOR THAT COUNTS.
0E86 18          CLC
0E87 716A        ADC      [TBASEY],Y      ;ADD OUR CURRENT VECTOR TO IT.
0E89 916A        STA      [TBASEY],Y
0E8B 8A          TXA
0E8C 18          CLC
0E8D 7168        ADC      [TBASEX],Y
0E8F 9168        STA      [TBASEX],Y
0E91 4C9C0E      JMP      ENTCKL
0E94 AD451F      ENTNAD: LDA      USEY
0E97 916A        STA      [TBASEY],Y
0E99 8A          TXA
0E9A 9168        STA      [TBASEX],Y
0E9C C8          ENTCKL: INY
0E9D 8C571F      STY      TPTR
0EA0 AD8E1F      LDA      EORGX      ;NOW ADD THE CURRENT VECTOR TO THE VECTOR THAT
0EA3 38          SEC
0EA4 ED441F      SBC      USEX      ;WILL BE REQUIRED TO GET US BACK TO OUR ORIGIN
0EA7 8D8E1F      STA      EORGX
0EAA AD8F1F      LDA      EORGY
0EAD 38          SEC
0EAE ED451F      SBC      USEY
0EB1 8D8F1F      STA      EORGY
0EB4 AD651F      LDA      TAMFLG      ;NOW CHECK OUT TARGET SIZING MODE
0EB7 3003 ^0EBC  BMI      IZNLCK      ;ISN'T IN LOCK MODE
0EB9 AC2A1F      LDY      MAXPTS      ;PATTERN LENGTH AND
0EBC 8C2B1F      IZNLCK: STY      NUMPTS      ;# POINTS DISPLAYED = MAX LENGTH IF IN LOCK.
0EBF 98          TYA
0EC0 A0FF        LDY      #$FF
0EC2 9168        STA      [TBASEX],Y      ;UPDATE INHERENT PATTERN LENGTH AS WELL.
0EC4 20AD1B      JSR      TSZDSP      ;DISPLAY # PTS
;
0EC7 206E1C      DRAWER: JSR      LSTERA      ;ERASE LAST THING WE DISPLAYED
0ECA 20CA1C      JSR      DRAWIT      ;AND DRAW ANEW
0ECD AD541F      LDA      CUMODE
0ED0 D019 ^0EEB  BNE      RELOOP      ;NOT PICTURE (MASTER) MODE
0ED2 AD6B1F      LDA      LOCFLG      ;IF LOCATE OR VISUALIZE IS ON, THEN IGNORE STAT
0ED5 1014 ^0EEB  BPL      RELOOP
0ED7 AD6D1F      LDA      VISFLG      ;OF BRUSH ON/OFF.
0EDA 100F ^0EEB  BPL      RELOOP      ;ONE OF THEM IS ON.
0EDC ADA21F      LDA      OFFLAG      ;IF WE'RE OFF SCREEN, THEN WE WON'T LEAVE
0EDF F00A ^0EEB  BEQ      RELOOP      ;ANY TRAILS BEHIND.
0EE1 AD6B1F      LDA      DRWFLG      ;IS BRUSH UP OR DOWN?
0EE4 3005 ^0EEB  BMI      RELOOP      ;UP
0EE6 A900        LDA      #0      ;DOWN, WE WON'T HAVE TO ERASE IT.
0EE8 8D301F      STA      ERSFLG      ;CLEAR 'HAVE TO ERASE' FLAG.
0EEB A900        RELOOP: LDA      #0      ;CLEAR 'HAVE CHANGED' FLAG
0EED 8D7F1F      STA      CHGFLG
0EF0 8D891F      STA      ORGFLG      ;CLEAR 'O'RIGINATING FLAG

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```

0EF3 ADA11F      LDA      PTCNT      ;NOW SET OFF SCREEN FLAG = 0 IF NO PTS WERE
0EF6 8DA21F      STA      OFFLAG     ;DRAWN ON SCREEN LAST TIME.
0EF9 AD841F      LDA      KBFRCH     ;NOW SEE IF WE'RE SUPPOSED TO REINSTITUTE THE F
0EFC F008 ^0F06  BEQ      LPNKFR     ;NOPE
0EFE A900        LDA      #0
0F00 8D841F      STA      KBFRCH
0F03 4C0D0F      JMP      LPFRZ
0F06 AD621F      LPNKFR: LDA      CSPEED      ;SINGLE STEP?
0F09 C953        CMP      #'S'
0F0B D003 ^0F10  BNE      NOFRZZ      ;NO
0F0D 209110      LPFRZ: JSR      FRZON      ;TURN FREEZE BACKON
0F10 4C490D      NOFRZZ: JMP      LOOP      ;AND ON AND ON AND ON...

```

```

;
;
;
;
;*****
;
0F13 5041494E54      DB      'PAINTER POWER'
0F20 20434F5059      DB      ' COPYRIGHT (C) 1981 BY ERIC S. PODIETZ '
0F47 5345524941      DB 'SERIAL # A-00524'

```

```

;*****
;
;
;
;=====
; FOLLOWING ARE THE KB HIT
; HANDLING ROUTINES.
;=====
;
;
;

```

```

; NONFUN: NON-FUNCTIONAL KEY HIT - JUST RETURN
;
;
;

```

```

0F57 20D064      NONFUN: JSR      SOUND      ;BELCH AT 'EM
0F5A 60          RTS

```

```

; COLMDE - CHANGE COLOR SELECTION MODE (KB OR PDL(1-4))
;
;
;

```

```

0F5B AD801F      COLMDE: LDA      HITTYP
0F5E F003 ^0F63  BEQ      COLMOK
0F60 4CD064      JMP      SOUND      ;KB HIT - NO GOOD, USER
0F63 AD3E1F      COLMOK: LDA      XCHAR1
0F66 8D771F      STA      DSCLFG     ;UPDATE DISPLAY FLAG
0F69 C94B        CMP      #'K'      ;IS IT KEY BOARD
0F6B D006 ^0F73  BNE      COLMOK
0F6D A900        LDA      #0
0F6F 8D761F      STA      COLFLG
0F72 60          RTS
0F73 2907      COLMOK: AND      #$07
0F75 8D761F      STA      COLFLG
0F78 60          RTS

```

```

;
; COLCH6 - PROCESS CHANGE IN PAINT COLOR
; -----
;
0F79 AC761F COLCH6: LDY COLFLG ;BELCH IF COLOR CONTROL IS PADDLES
0F7C F004 ^0F82 BEQ COLCKB
0F7E 20D064 JSR SOUND
0F81 60 RTS

;
0F82 290F COLCKB: AND #$0F ;HACK OUT ASCII
0F84 8D7A1F STA BCOLOR ;SAVE IN BACK-UP COLOR
0F87 09B0 ORA #$B0 ;MAKE IT ASCII IF IT WASN'T
0F89 8D7B1F STA DSCOLR ;FORM CHARACTER FOR CTL DISPLAY
0F8C A01E LDY #TXCOLR
0F8E 20BA17 JSR DPAGE2
0F91 AD541F LDA CUMODE ;NOW: IF WE'RE IN MONITOR, DON'T PHYSICALLY
0F94 D022 ^0FB8 BNE CGPNOF ;IMPLEMENT THE COLOR CHANGE. WAIT.
0F96 AD7A1F LDA BCOLOR

;
; COLCH2 IS ENTRY POINT FOR WHEN WE WANT TO CHANGE ONLY COLOR DISPLAYED, BUT
; NOT BACK-UP COLOR. THIS ENTRY IS USED WHEN SETTING MONITOR MODE.
;
0F99 290F COLCH2: AND #$0F
0F9B 8D7B1F STA CCOLOR ;UPDATE CURRENT COLOR DISPLAYED
0F9E AA TAX
0F9F BD071F LDA COLORS-1,X
; ;GET A COLOR
; ;CODE FOR 1-8
0FA2 8D411F STA HCOLOR ;NEW COLOR !
0FA5 8D421F STA HCOLR2 ;NOW WE HAVE TO SHIFT IT FOR DISPLAY OF
0FA8 0A ASL A ODD BYTES.
0FA9 C9C0 CMP #$C0
0FAB 1008 ^0FB5 BPL RTS1
0FAD AD421F LDA HCOLR2
0FB0 497F EOR #$7F
0FB2 8D421F STA HCOLR2
0FB5 206E1C RTS1: JSR LSTERA ;ERASE WHAT WE DREW IN OLD COLOR
0FB8 60 CGPNOF: RTS

;
0FB9 AD DB $AD ;==FLAK

;
; COLTAB - UPDATE COLOR LOOKUP TABLE (CALLED BY SET-UP MENU)
; -----
;
0FBA AE801F COLTAB: LDX HITYP
0FBD F003 ^0FC2 BEQ COLTOK
0FBF 4CD064 JMP SOUND
0FC2 AE3F1F COLTOK: LDX XCHAR2 ;GET COLOR # WE'RE ON
0FC5 AD3E1F LDA XCHAR1 ;GET ASCII CHARACTER HIT (1-8)
0FC8 9D0F1F STA ACLOOK-1,X ;STORE IN ASCII
0FCB 290F AND #$0F
0FCD 9D171F STA DLOOK-1,X ;STORE FOR INTERNAL USE
0FD0 206E1C JSR LSTERA ;ERASE, SINCE THIS LITTLE CHANGE HERE
0FD3 60 RTS ;COULD AFFECT CURRENT COLOR.
;

```

```

;
; UPDSPD - UPDATE SPEED CONTROL (CALLED FROM OUTSIDE)
;
;
;
0FD4 8D621F  UPDSPD: STA  CSPEED
0FD7 C953      CMP  #'S'
0FD9 D002 ^0FDD BNE  UPSNTS      ;NOT SINGLE STEP
0FDB A908      LDA  #8        ;GO AT FULL TILT WHEN IN SINGLE STEP
0FDD 290F      UPSNTS: AND  #0F
0FDF A8        TAY
0FE0 B91F1F     LDA  SPEEDS-1,Y
0FE3 8D601F     STA  CURCNT
0FE6 A901      LDA  #1
0FE8 8D611F     STA  HCOUNT      ;SET COUNTER SO THAT NEXT TIME THRU MAIN LOOP
0FEB 60        RTS              ;SPEED WILL BE CHANGED TO NEW SPEED.

;
0FEC AD        DB  $AD ;==FLAK
;
; BLITZ, RABBIT, TURTLE & SNAIL: SPEED SETTINGS
;
;
;
0FED A938      BLITZ: LDA  #'8'      ;HIGH SPEED, BRO..
0FEF 20D40F     JSR  UPDSPD
0FF2 60        RTS
0FF3 A935      RABBIT: LDA  #'5'
0FF5 20D40F     JSR  UPDSPD
0FF8 60        RTS

;
0FF9 A932      TURTLE: LDA  #'2'
0FFB 20D40F     JSR  UPDSPD
0FFE 60        RTS

;
0FFF A953      SNAIL: LDA  #'S'
1001 20D40F     JSR  UPDSPD
1004 60        RTS

;
;
; CLEAR ENTIRE SCREEN TO ORIGINAL BACKGROUND COLOR
;
;
;
1005 AD7C1F     CLROLD: LDA  BKCLR      ;GET BACKGROUND COLOR
1008 201F10     JSR  DOBKND
100B 60        RTS

;
100C AD        DB  $AD ;==FLAK
;
;
; CHBKND - CHANGE HI-RES BACKGROUND (CALLED EXTERNALLY)
;
;
;
100D AD801F     CHBKND: LDA  HITYP
1010 F003 ^1015 BEQ  CHBOK
1012 4CD064     JMP  SOUND
1015 AD3E1F     CHBOK: LDA  XCHAR1

```

```

1018 8D7D1F      STA      DSBKND
101B 201F10      JSR      DOBKND      ;GO CHANGE IT
101E 60          RTS

;
;
; DOBKND - CHANGE HI-RES BACKGROUND
;
;
101F 290F      DOBKND: AND      #$0F
1021 8D7C1F      STA      BKCLR      ;UPDATE BACKGROUND COLOR
1024 206E1C      JSR      LSTERA
1027 AD541F      LDA      CUMODE      ;DO IT REGARDLESS OF WHAT MODE WE'RE IN.
102A 8D551F      STA      HLDMODE      ;WE WANT TO 'FLASH' THE NEW BACKGROUND COLOR.
102D 209511      JSR      MASTER      ;SWITCH TO PICTURE
1030 AD7C1F      LDA      BKCLR
1033 20990F      JSR      COLCH2      ;CHANGE TO NEW BACKGROUND COLOR.
1036 207E1D      JSR      HBKEND      ;DO IT !
1039 AD551F      LDA      HLDMODE      ;RESTORE PREVIOUS MODE
103C F004 ^1042  BEQ      CHBMAS      ;'T WAS MASTER
103E 206611      JSR      MONITR
1041 60          RTS
1042 209511      CHBMAS: JSR      MASTER      ;RESTORE PAINT MODE AND PAINTING COLOR
1045 60          RTS

```

FLIP BETWEEN DRAW/ENTER MODES

```

1046 AD691F      SWMODE: LDA      MEFLAG      ;WHERE ARE WE NOW?
1049 101C ^1067  BPL      DRAWNW      ;WE'RE ENTERING
104B A900          LDA      #$0      ;CLEAR OUT DISPLACEMENT PTR TO TARGET
104D 8D571F      STA      TPTR
1050 8D911F      STA      TBSPTR
1053 AE651F      LDX      TAMFLG      ;WHAT'S THE SIZING MODE?
1056 3003 ^105B  BMI      SWMNLK      ;NOT PADDLES
1058 AD2A1F      LDA      MAXPTS      ;FORCE # OF PTS TO BE = MAXIMUM
105B A0FF      SWMNLK: LDY      #$FF      ;UPDATE SIZE OF PATTERN
105D 9168          STA      [TBASEX],Y
105F 8D2B1F      STA      NUMPTS      ;WE'RE ENTERING A NEW PATTERN
1062 A90D          LDA      #$0D      ;AN INVERTED 'M' FOR MAKE
1064 4C6910      JMP      UPMODE
1067 A9CD      DRAWNW: LDA      #$CD      ;AN 'M' FOR MAKE OFF
1069 8D691F      UPMODE: STA      MEFLAG
106C A09E          LDY      #TXMODE
106E 20BA17      JSR      DPAGE2      ;UPDATE CONTROL DISPLAY
1071 20AD18      JSR      TSZDSP
1074 60          RTS

;
1075 AD          DB      $AD ;==FLAK

```

DRAWON - FLIP DRAW ENABLED SWITHC

PP16 . ASM

```

1076 AD681F      DRAWON: LDA      DRWFLG
1079 1005 ^1080      BPL      DTRNOF      ;WE'RE DRAWING, LET'S CUT IT OUT.
107B A915      DTRNON: LDA      #$15
107D 4C8210      JMP      DUPMDE
1080 A9D5      DTRNOF: LDA      #$D5      ;A NORMAL 'U' FOR UP
1082 8D681F      DUPMDE: STA      DRWFLG
1085 A027      LDY      #TXDRWF
1087 20BA17      JSR      DPAGE2      ;UPDATE CONTROL DISPLY
108A 60      RTS

```

```
108B AD DB $AD :=FLAK
```

FREEZE - FLIP FREEZE FLAG

```

108C AD671F      FREEZE: LDA      FRZFLG
108F 1005 ^1096      BPL        LKMODE
1091 A920        FRZON: LDA      ##20          ;A BLACK ON WHITE SPACE
1093 4C9F10      JMP        FUPMDE
1096 AD541F      LKMODE: LDA      CUMODE       ;DON'T UNFREEZE IF IN TEXT MODE
1099 F002 ^109D      BEQ        FTRNOF
109B 100A ^10A7      BPL        NOUNF
109D A9A0        FTRNOF: LDA      ##A0         ;NORMAL SPACE
109F 8D671F      FUPMDE: STA      FRZFLG
10A2 A09E        LDY        #TXFREZ
10A4 20AC17      JSR        DPAGE1           ;UPDATE CONTROL DISPLAY
10A7 60          NOUNF: RTS

```

```
1008 AD DB $AD ::=FLAK
```

: PNTHIT - TOGGLE BETWEEN PAINT (MASTER) AND MONITOR MODES. SAME AS BRSHIT.

```

10A9 206E1C      PNTHIT: JSR      LSTERA
10AC AD6E1F      LDA      PNTFLG      ;WHERE ARE WE NOW?
10AF 100E ^10BF      BPL      PNPNOF      ;WE'RE PAINTING, GET RID OF PICTURE.
10B1 209511      PNPNOF: JSR      MASTER      ;SWITCH TO PICTURE
10B4 A910      LDA      ##10      ;INVERSE 'P' FOR PAINT
10B6 8D6E1F      STA      PNTFLG
10B9 A0A7      LDY      #TXPNT
10BB 20AC17      JSR      DPAGE1
10BE 50      RTS

```

```

10BF 20E611      PNPNOF: JSR    MONITR      ;SWITCH TO MONITOR
10C2 A9D0        LDA    #D0      ;REGULAR 'P' FOR PAINT OFF.
10C4 8D6E1F      STA    PNTFLG
10C7 A0A7        LDY    #TXPNT
10C9 20AC17      JSR    DPAGE1
10CC 60          RTS

```

: VERHIT - TOGGLE VISUALIZE MODE

```

;
10CD AD6D1F VERHIT: LDA VISFLG
10D0 1005 ^10D7 BPL VEROFF
10D2 A916 VERHPT: LDA ##16 ;INVERSE 'V' FOR VISUALIZE ON
10D4 4CD910 JMP VERUPD
10D7 A9D6 VEROFF: LDA ##D6
10D9 8D6D1F VERUPD: STA VISFLG
10DC A08A LDY #TXVER
10DE 20AC17 JSR DPAGE1
10E1 206E1C JSR LSTERA ;ERASE WHATEVER IT WAS WE LAST DISPLAYED.
10E4 60 RTS

;
; WRPHIT - TOGGLE WRAPAAROUND MODE
;
;
;
10E5 AD711F WRPHIT: LDA WRPFLG
10E8 1008 ^10F2 BPL WRPOFF
10EA 20F61D WRPON: JSR HGHCLR ;CLEAR HIGH ORDER BITS OF SCREEN LOC SO THAT
;OBJECT IS FORCED TO BE WITHIN SCREEN LIMITS.
10ED A917 LDA ##17 ;INVERSE 'W' FOR WRAPAROUND
10EF 4CF410 JMP WRPUPD
10F2 A9D7 WRPOFF: LDA ##D7
10F4 8D711F WRPUPD: STA WRPFLG
10F7 A08A LDY #TXWRP
10F9 20BA17 JSR DPAGE2
10FC AC541F LDY CUMODE ;IF WE'RE PAINTING, THEN WE SHOULD INSTIUTE
10FF 300C ^110D BMI WRPEXT ;THE CHANGE. IF IN MONITOR WE'LL FORCE
1101 AD711F LDA WRPFLG
1104 8D981F STA WRPIND ;WRAPAROUND TO BE ON.
1107 206E1C JSR LSTERA
110A 20B91C JSR WRAPAT ;DO THE PATCH TO DRAWIT
110D 60 WRPEXT: RTS

;
; QSTHIT - TOGGLE QUICK STROKE MODE
;
;
;
110E AD701F QSTHIT: LDA QSTFLG
1111 1016 ^1129 BPL QSTOFF
1113 A900 LDA #0 ;RESET POINTERS TO BEGINNING OF QUICKSTROKE
1115 8D871F STA OPTR
1118 8D581F STA SPTR ;BUFFER
111B 8D921F STA BSPTR
111E 208A1B JSR SSZDSP
1121 206E1C JSR LSTERA
1124 A911 LDA ##11 ;INVERSE 'Q' FOR QUICK STROKE
1126 4C2B11 JMP QSTUPD
1129 A9D1 QSTOFF: LDA ##D1
112B 8D701F QSTUPD: STA QSTFLG
112E A00A LDY #TXQST
1130 20BA17 JSR DPAGE2
1133 60 RTS

;
; LOCHIT - TOGGLE LOCATE MODE
;
;
;

```

```

1134 AD6B1F      LOCHIT: LDA      LOCFLG
1137 1011 ^114A      BPL      LOCOFF
1139 ADA41F      LOCON: LDA      LOCX          ;RESTORE PREVIOUS LOCATE VECTOR
113C 8D441F      STA      USEX
113F ADA51F      LDA      LOCY
1142 8D451F      STA      USEY
1145 A90C        LDA      #$0C          ;INVERSE 'L' FOR LOCATE
1147 4C5D11      JMP      LOCUPD
114A AD6B1F      LOCOFF: LDA     LOCFLG        ;CHECK IF LOCATE ALREADY OFF
114D 300C ^115B      BMI      LOCAOF
114F AD441F      LDA      USEX          ;IF ON, THEN SAVE CURRENT LOCATE VECTOR.
1152 8DA41F      STA      LOCX
1155 AD451F      LDA      USEY
1158 8DA51F      STA      LOCY
115B A9CC        LOCAOF: LDA     #$CC
115D 8D6B1F      LOCUPD: STA     LOCFLG
1160 A094        LDY      #TXLOC
1162 20AC17      JSR      DPAGE1
1165 60          RTS

```

```

; MONITR - DISPLAY MONITOR SCREEN
;

```

```

1166 206E1C      MONITR: JSR      LSTERA
1169 AD541F      LDA      CUMODE ;DON'T COPY IF WE'RE ALREADY IN MONITOR.
116C 3003 ^1171      BMI      NOCOP0
116E 203064      JSR      COPYTO          ;COPY HGR PAGE 1 TO HGR PAGE 2
1171 A906        NOCOP0: LDA     #6          ;SWITCH TO BLACK BACKGROUND FOR MONITOR.
1173 20990F      JSR      COLCH2
1176 207E1D      JSR      HBKGND
1179 A9FF        LDA      #$FF          ;ESTABLISH MONITOR MODE
117B 8D541F      STA      CUMODE
117E A903        LDA      #3          ;DRAW IN WHITE WHEN IN MONITOR MODE.
1180 20990F      JSR      COLCH2
1183 A901        LDA      #1          ;ALWAYS USE NORMAL PAINT MODE
1185 8D941F      STA      PNMIND        ;WHEN IN MONITOR.
1188 202416      JSR      PNMSET
118B A917        LDA      #$17        ;ALWAYS KEEP WRAPAROUND ON WHEN IN
118D 8D981F      STA      WRPIND        ;MONITOR MODE
1190 20B91C      JSR      WRAPAT
1193 60          RTS

```

```

1194 AD          DB      $AD ;==FLAK

```

```

; MASTER - DISPLAY PICTURE
;

```

```

1195 206E1C      MASTER: JSR      LSTERA
1198 AD541F      LDA      CUMODE          ;IF WE'RE NOT IN MONITOR MODE, THEN DON'T
;                                     ;BOTHER COPYING HGR2 TO HGR1. DON'T DO EITHER
119B F003 ^11A0      BEQ      NOTMNG        ;IF IN MASTER, CAUSE WE'LL BE COPYING OLD IMAG
119D 201464      JSR      COPYBK
11A0 A900        NOTMNG: LDA     #$0          ;RESTORE MODE TO DISPLAY PICTURE.
11A2 8D541F      STA      CUMODE

```

```

11A5 AD931F      LDA      PNMFLG      ;RESTORE PAINT MODE TO WHATEVER IT WAS
11A8 200A16      JSR      PNMHIT
11AB AD711F      LDA      WRPFLG      ;RESTORE WRAPAROUND CTL TO WHATEVER IT WAS
11AE 8D981F      STA      WRPIND
11B1 20B91C      JSR      WRAPAT
11B4 AD7A1F      LDA      BCOLOR      ;RESTORE PAINT COLOR
11B7 20990F      JSR      COLCH2
11BA 60          RTS

;
11BB AD          DB      $AD ;==FLAK
;
; KB VECTOR HANDLERS
; -----
;
11BC 203212      KBLEFT: JSR      KBSTUP      ;SET UP X & Y REGS FOR ADD OR SET,
11BF CA          DEX
;DEPENDING IF ASCII CONTROL BIT IS SET.
11C0 4CDB11      JMP      KBVECH      ;GO LEFT
;
11C3 203212      KBRGHT: JSR      KBSTUP
11C6 E8          INX
;GO RIGHT
11C7 4CDB11      JMP      KBVECH
;
11CA 203212      KBUP:   JSR      KBSTUP
11CD C8          INY
;GO UP
11CE 4CDB11      JMP      KBVECH
;
11D1 203212      KBDWN:  JSR      KBSTUP
11D4 88          DEY
;GO DOWN
11D5 4CDB11      JMP      KBVECH
;
11D8 203212      KBSTIL: JSR      KBSTUP      ;STAY RIGHT THERE (0,0)
;
;
11DB 8E281F      KBVECH: STX      SAVEX
11DE 8C291F      STY      SAVEY
11E1 A200        LDX      #0
;TURN ON FLAGS WHICH WILL TELL US WHETHER WE
11E3 A000        LDY      #0
;SHOULD USE THE (X,Y) VECTOR WE FIGURE OUT.
11E5 AD6B1F      LDA      LOCFLG
;IN LOCATE MODE?
11E8 3008 ^11F2  BMI      KBVE33
;NO
11EA A9FF        LDA      #-1
;SET CURRENT SOURCE OF VECTORS FOR LOCATE MODE
11EC 8D6C1F      STA      CURLOC
;TO KB.
11EF 4C0912      JMP      KBOK
;SINCE WE'RE IN LOCATE MODE, THERE'S NO NEED TO
;CHECK IF HOLDX OR HOLDY ARE ON.
;
11F2 AD741F      KBVE33: LDA      XCRUISE
;IS HOLDX ON?
11F5 3001 ^11F8  BMI      KBNOCX
;NO, WE CAN'T USE X PORTION OF OUR VECTOR.
11F7 E8          INX
;SET 'OK TO UPDATE X' FLAG ON.
11F8 AD751F      KBNOCX: LDA      YCRUISE
;SAME THING FOR Y
11FB 3001 ^11FE  BMI      KBNOCY
11FD C8          INY
11FE 88          KBNOCY: DEY
;NOW TO CHECK IF WE'RE ALLOWED TO
11FF F007 ^1208  BEQ      KBOK1
;UPDATE EITHER X OR Y.
1201 CA          DEX
;SO FAR, WE CAN'T DO Y.
1202 F005 ^1209  BEQ      KBOK
;OK TO DO X.
1204 20D064      JSR      SOUND
;BUZZ 'EM. NO GO.
1207 60          RTS

```

```

1208 CA      KBOK1: DEX      ;EVEN OUT X CHECKING
1209 E8      KBOK:  INX
120A F006 ^1212      BEQ      KBNOX      ;DON'T UPDATE X
120C AE281F      LDX      SAVEX
120F 8E441F      STX      USEX
1212 C8      KBNOX: INY
1213 F006 ^121B      BEQ      KBNOY      ;DON'T UPDATE Y
1215 AC291F      LDY      SAVEY
1218 8C451F      STY      USEY
121B AD6B1F      KBNOY: LDA      LOCFLG      ;ARE WE IN LOCATE?
121E 1006 ^1226      BPL      KBLOCO      ;YES, DON'T UPDATE (X,Y) TO BE APPLIED TO
1220 8E461F      STX      BUSEX      ;TARGET ONCE WE GET OUT OF LOCATE.
1223 8C471F      STY      BUSEY      ;UPDATE THE 'REAL' VECTOR TO BE APPLIED.
1226 AD841F      KBLOCO: LDA      KBFRCH      ;SHOULD WE TURN FREEZE OFF?
1229 F006 ^1231      BEQ      KBLEXT      ;NOPE
122B 8D611F      STA      MCOUNT      ;MAKE THINGS GO FASTER
122E 209D10      JSR      FTRNOF      ;TURN FREEZE OFF - KBFRCH FLAG WILL CAUSE IT TO
1231 60      KBLEXT: RTS      ;BE TURNED OFF AFTER ONE PASS THROUGH LOOP.

```

```

;
;
; KBSTUP - SET X & Y REGISTERS UP TO HANDLE KB VECTOR.
;
;

```

```

1232 48      KBSTUP: PHA
1233 A200      LDX      #0
1235 8E841F      STX      KBFRCH      ;CLEAR FREEZE TOGGLE INDICATOR.
1238 2940      AND      #64      ;IS CONTROL BIT ON?
123A D008 ^1244      BNE      KBNTAD      ;YES, CONTROL KEY WAS NOT DEPRESSED.
123C AE441F      LDX      USEX      ;ADD OUR VECTOR THE LAST USED VECTOR.
123F AC451F      LDY      USEY
1242 68      PLA
1243 60      RTS
1244 AD6B1F      KBNTAD: LDA      LOCFLG      ;DON'T SET HOLDX OR Y IF IN LOCATE.
1247 1006 ^124F      BPL      KBNHLD
1249 206E12      JSR      FIXX
124C 208412      JSR      FIXY
124F A200      KBNHLD: LDX      #0
1251 A000      LDY      #0
1253 68      PLA
1254 C948      CMP      #'H'      ;DID THEY HIT 'H'?
1256 F00A ^1262      BEQ      KBSTEX      ;IF SO, THEN WE DON'T WANT TO TURN FREEZE ON
1258 AD671F      LDA      FRZFLG      ;TEMPORARILY. IF FREEZE ISN'T ON NOW, THEN WE
125B 3005 ^1262      BMI      KBSTEX      ;DON'T WANT TO DO SO EITHER.
125D A901      LDA      #1      ;FREEZE WAS ON, SO SET FLAG WHICH WILL CAUSE
125F 8D841F      STA      KBFRCH      ;LOOP TO BE EXECUTED ONCE, EACH TIME THEY
1262 60      KBSTEX: RTS      ;G,Y,N OR J. A SNAIL MODE EMULATION.

```

```

;
;
; PDREST - RESTORE LOCATE MODE CONTROL TO PADDLES (FROM KB)
;
;

```

```

1263 A900      PDREST: LDA      #0
1265 8D6C1F      STA      CURLOC
1268 60      RTS      ;THINGS HAVE BEEN HARDER

```

;
 ;
 ; HOLDX - FREEZE CURRENT DELTA X INPUT
 ;
 ;

```

1269 AD741F HOLDX: LDA XCRUISE
126C 1005 ^1273 BPL XTRNOF
126E A91A FIXX: LDA #$1A ;TURN HOLD X ON - REVERSE 'Z'
1270 4C7512 JMP XUPMDE
1273 A9DA XTRNOF: LDA #$DA ;TURN HOLD X OFF - NORMAL 'F'
1275 8D741F XUPMDE: STA XCRUISE
1278 A014 LDY #TXHLDX
127A 20BA17 JSR DPAGE2
127D 60 RTS
  
```

127E AD DB \$AD ;==FLAK

;
 ;
 ; HOLDY - FREEZE CURRENT DELTA Y INPUT
 ;
 ;

```

127F AD751F HOLDY: LDA YCRUISE
1282 1005 ^1289 BPL YTRNOF
1284 A918 FIXY: LDA #$18 ;TURN HOLD Y ON - REVERSE 'X'
1286 4C8B12 JMP YUPMDE
1289 A9D8 YTRNOF: LDA #$D8 ;TURN HOLD Y OFF - NORMAL 'X'
128B 8D751F YUPMDE: STA YCRUISE
128E A016 LDY #TXHLDY
1290 20BA17 JSR DPAGE2
1293 60 RTS
  
```

1294 AD DB \$AD ;==FLAK

;
 ;
 ; NEGX & NEGY - FLIP FLAGS FOR REVERSAL OF SOURCE VECTOR
 ;
 ;

```

1295 AD6B1F NEGX: LDA LOCFLG ;IN LOCATE MODE?
1298 300F ^12A9 BMI NEGXNL ;NOPE
129A A9FF LDA #-1 ;SWITCH LOCATE CONTROL TO KB
129C 8D6C1F STA CURLOC
129F A900 LDA #0 ;NOW REVERSE MOTION
12A1 38 SEC
12A2 ED441F SBC USEX
12A5 8D441F STA USEX
12A8 60 RTS

12A9 AD741F NEGXNL: LDA XCRUISE ;IF WE'RE CRUISING, DON'T TOGGLE MODE
12AC 100A ^12B8 BPL NGXKB ;YUP
12AE AD5B1F LDA CURSRC ;NO CRUISE, SOURCE BETTER BE KB OR PATTERN.
12B1 3005 ^12B8 BMI NGXKB ;KB
12B3 D00D ^12C2 BNE NGXOK ;PATTERN
12B5 4CD712 JMP NGXPAD ;DON'T DO THAT!!
12B8 A900 NGXKB: LDA #0
12BA 38 SEC
12BB ED461F SBC BUSEX ;NEGATE KB VECTOR
  
```

```

12BE 8D461F      STA      BUSEX
12C1 60          RTS
12C2 AD721F      NGXOK: LDA      XNEG
12C5 3005 ^12CC BMI      NXFIX
12C7 A9AC        XNEGOF: LDA      #$AC      ;NORMAL ','
12C9 4CCE12      JMP      NXFIX+2
12CC A92C        NXFIX: LDA      #$2C      ;INVERSE ','
12CE 8D721F      STA      XNEG
12D1 A094        LDY      #TXNEGX
12D3 20BA17      JSR      DPAGE2
12D6 60          RTS
12D7 20D064      NGXPAD: JSR      SOUND
12DA 60          RTS

;
12DB AD6B1F      NEGY:  LDA      LOCFLG      ;IN LOCATE MODE?
12DE 300F ^12EF BMI      NEGYNL      ;NOPE
12E0 A9FF        LDA      #-1      ;SWITCH LOCATE CONTROL TO KB
12E2 8D6C1F      STA      CURLOC
12E5 A900        LDA      #0      ;NOW REVERSE MOTION
12E7 38          SEC
12E8 ED451F      SBC      USEY
12EB 8D451F      STA      USEY
12EE 60          RTS

;
12EF AD751F      NEGYNL: LDA      YCRUISE      ;IF WE'RE CRUISING, DON'T TOGGLE MODE
12F2 100A ^12FE BPL      NGYKB      ;YUP
12F4 AD5B1F      LDA      CURSRC      ;NO CRUISE, SOURCE BETTER BE KB OR PATTERN.
12F7 3005 ^12FE BMI      NGYKB      ;KB
12F9 D00D ^130B BNE      NGYOK      ;PATTERN
12FB 4C1D13      JMP      NGYPAD      ;DON'T DO THAT!!
12FE A900        NGYKB: LDA      #0
1300 38          SEC
1301 ED471F      SBC      BUSEY      ;NEGATE KB VECTOR
1304 8D471F      STA      BUSEY
1307 60          RTS
1308 AD731F      NGYOK: LDA      YNEG
130B 3005 ^1312 BMI      NYFIY
130D A9AE        YNEGOF: LDA      #$AE      ;NORMAL ','
130F 4C1413      JMP      NYFIY+2
1312 A92E        NYFIY: LDA      #$2E      ;INVERSE ','
1314 8D731F      STA      YNEG
1317 A096        LDY      #TXNEGY
1319 20BA17      JSR      DPAGE2
131C 60          RTS
131D 20D064      NGYPAD: JSR      SOUND
1320 60          RTS

;
; TRGMDE - SET BRUSH/TARGET SIZING MODE
;
;
;
1321 AD801F      TRGMDE: LDA      HITTP
1324 F003 ^1329 BEQ      TRGMOK
1326 4CD064      JMP      SOUND
1329 AD3E1F      TRGMOK: LDA      XCHAR1
132C 8D661F      STA      DSTFLG

```

```

132F 206E1C      JSR      LSTERA
1332 AD661F      LDA      DSTFLG
1335 C94E        CMP      #'N'      ;CHANGING TO NORMAL MODE?
1337 D01E ^1357  BNE      TRGMNN      ;NOPE
1339 A9FF        LDA      #255      ;IN NORMAL MODE, MAX # PTS IS 255
133B 8D2A1F      STA      MAXPTS
133E 8D651F      STA      TAMFLG      ;-1 MEANS NORMAL
1341 AD691F      LDA      MEFLAG      ;NOW: WHAT DO WE DO IF WE'RE ENTERING?
1344 1007 ^134D  BPL      TRGME
1346 A0FF        LDY      #$FF      ;NOT ENTERING; # PTS TO DISPLAY
1348 B168        LDA      [BASEX],Y  ;IS THE INHERENT SIZE OF THE OBJECT.
134A 4C5013      JMP      TRGME+3
134D AD571F      TRGME: LDA      TPTR      ;ENTERING; # PTS TO DISPLAY IS THE NUMBER
1350 8D2B1F      STA      NUMPTS      ;THAT HAVE BEEN ENTERED.
1353 20AD1B      JSR      TSZDSP      ;TELL THE WORLD ABOUT IT.
1356 60          RTS

;
;
;
1357 2907      TRGMNN: AND      #$07      ;WE'LL GET THE SIZE FROM THE PADDLES, AND THAT
1359 8D651F      STA      TAMFLG      ;HAPPENS ELSEWHERE. SO JUST FIX UP THE FLAG AND
135C 60          RTS      ;SCRAMBLE YOUR EGGS.

;
;
; SRCMDE - UPDATE STROKE (SOURCE) SIZING MODE.
;
;
135D AD801F      SRCMDE: LDA      HITTP
1360 F003 ^1365  BEQ      SRCMOK
1362 4CD064      JMP      SOUND
1365 AD3E1F      SRCMOK: LDA      XCHAR1
1368 8D641F      STA      DSSFLG
136B C94E        CMP      #'N'      ;NORMAL MODE?
136D D01B ^138A  BNE      SRCMNN      ;NOPE
136F A9FF        LDA      #255      ;NORMAL MODE
1371 8D631F      STA      SAMFLG
1374 AD5B1F      LDA      CURSRC      ;IS CURRENT STROKE A PATTERN?
1377 F00B ^1384  BEQ      SRCONP
1379 A0FF        LDY      #$FF      ;YES, GET THE PATTERN'S INHERENT SIZE.
137B B16C        LDA      [BASEX],Y
137D 8D2E1F      STA      SNMPTS
1380 208A1B      JSR      SSZDSP
1383 60          RTS

;
1384 A920      SRCONP: LDA      #32      ;DISPLAY OF WHICH IS DETERMINED BY THE SIZING
1386 8D2E1F      STA      SNMPTS      ;MODE. IN NORMAL MODE, MAX # PTS TO ENTER/
1389 60          RTS      ;DISPLAY IS 32.

;
;
138A 2907      SRCMNN: AND      #$07      ;USE ONE OF THE PADDLES TO DETERMINE THE SIZE
138C 8D631F      STA      SAMFLG      ;OF THE STROKE. SINCE THE PADDLES ARE READ
138F 60          RTS      ;ELSEWHERE, DON'T WORRY ABOUT SETTING THE
;                               ;SIZE HERE.
;
;
; SRCALL - SET SOURCE OR STROKE (CALLED FROM OUTSIDE)
;
;

```



```

1390 AD801F      SRCALL: LDA      HITTP
1393 F003 ^1398      BEQ      SRCADK
1395 4CD064      JMP      SOUND
1398 AD3E1F      SRCADK: LDA      XCHAR1
139B 8D5C1F      STA      CSOURC
139E C950      CMP      #'P'      ;IS SOURCE PADDLES?
13A0 F023 ^13C5      BEQ      SRCAP      ;YUP
13A2 290F      AND      #$0F
13A4 8D5B1F      STA      CURSRC      ;SAVE PATTERN # WE'RE USING AS STROKE.
13A7 20E213      JSR      SRSETB      ;SET UP HOOK INTO OUR PATTERN'S VECTORS.
13AA 206E1C      JSR      LSTERA      ;IN CASE WE'RE IN VISUALIZE MODE
13AD A0FF      LDY      #$FF      ;GET INHERENT SIZE OF PATTERN
13AF B16C      LDA      [SBASEX],Y
13B1 8D881F      STA      ONMPTS
13B4 A900      LDA      #0
13B6 8D871F      STA      OPTR
13B9 AE631F      LDX      SAMFLG      ;CHECK SIZING MODE TO MAKE SURE WE SET UP
13BC 1006 ^13C4      BPL      SRCAN0      ;PROPERLY. BRANCH IF NOT IN NORMAL MODE.
13BE 8D2E1F      STA      SNMPTS
13C1 208A1B      JSR      SSZDSP
13C4 60      SRCAN0: RTS      ;IF SIZING MODE WAS EITHER LOCK OR PADDLES,
; THEN # PTS IS ALREADY SET OR WILL BE SET.
13C5 A900      SRCAP: LDA      #0      ;0 IS FOR PADDLES
13C7 8D5B1F      STA      CURSRC      ;STORE INTERNAL SOURCE DESIGNATION
13CA 20C712      JSR      XNEGOF
13CD 200D13      JSR      YNEGOF      ;SETTING OF NEGX & NEGY IS ONLY SIGNIFICANT
; WHEN SOURCE IS A PATTERN.
13D0 A0FF      LDY      #$FF
13D2 AD631F      LDA      SAMFLG      ;IF WE'RE IN LOCK MODE, WE ARE DEALING WITH
13D5 100A ^13E1      BPL      SRCALK      ;A FIXED # OF PTS, DETERMINED BY A PADDLE.
13D7 A920      LDA      #32      ;NOT LOCKED, SET CURRENT LENGTH = 32.
13D9 9174      STA      [CBASEX],Y      ;IF PDLs ARE CONTROLLING SIZE, THIS WILL BE
13DB 8D2E1F      STA      SNMPTS      ;CHANGED UPON REENTRY INTO MAIN LOOP.
13DE 208A1B      JSR      SSZDSP
13E1 60      SRCALK: RTS
;
; SRSETB - FOR CURRENT SOURCE, SET UP PATTERN BASE ADDR IN SBASEX.
;
;
13E2 48      SRSETB: PHA
13E3 18      CLC
13E4 2A      ROL      A      ;DOUBLE IT
13E5 A8      TAY      ;FORM DISPLACEMENT TO PATTERN TABLE
13E6 B9A51F      LDA      APATTS-2,Y
13E9 856C      STA      SBASEX
13EB 856E      STA      SBASEY
13ED B9A61F      LDA      APATTS-1,Y
13F0 856D      STA      SBASEX+1
13F2 18      CLC
13F3 6901      ADC      #1
13F5 856F      STA      SBASEY+1
13F7 58      PLA
13F8 60      RTS
;

```

```

;
13F9 AD          DB      $AD ;==FLAK
;
;
; TRGALL: SELECT PATTERNS 1-8 AS TARGET (CALLED FROM OUTSIDE)
;-----
13FA AD801F      TRGALL: LDA      HITTP
13FD F003 ^1402  BEQ      TRGAK
13FF 4CD064      JMP      SOUND
1402 AD3E1F      TRGAK: LDA      XCHAR1
1405 8D5A1F      STA      CTARG
1408 290F        AND      #$0F
140A 40          PHA
140B 206E1C      JSR      LSTERA
140E 60          PLA
140F 202A14      JSR      TRSETB      ;SET UP POINTERS TO PATTERN
1412 A900        LDA      #0          ;INITIALIZE POINTERS
1414 8D571F      STA      TPTR        ;NOW THAT WE'RE SELECTING A NEW PATTERN
1417 8D911F      STA      TBSPTR
141A AD651F      NOPERA: LDA      TAMFLG
141D 100A ^1429  BPL      TAUPTS      ;SKIP IF NOT IN NORMAL MODE
141F A0FF        LDY      #$FF
1421 B168        LDA      [TBASEX],Y  ;GET # PTS IN TARGET PATTERN
1423 8D2B1F      STA      NUMPTS
1426 20AD1B      JSR      TSZDSP
1429 60          TAUPTS: RTS
;
142A 8D591F      TRSETB: STA      CURTRG      ;SAVE PATTERN #
142D 18          CLC
142E 2A          ROL      A            ;DOUBLE IT
142F A8          TAY            ;FORM DISPLACEMENT TO PATTERN TABLE
1430 B9A51F      LDA      APATTS-2,Y
1433 8568        STA      TBASEX
1435 856A        STA      TBASEY
1437 B9A61F      LDA      APATTS-1,Y
143A 8569        STA      TBASEX+1
143C 18          CLC
143D 6901        ADC      #1
143F 856B        STA      TBASEY+1
1441 60          RTS
;
1442 AD          DB      $AD ;==FLAK
;
; CLRCTR - CLEAR TICK COUNTERS
;-----
1443 A900        CLRCTR: LDA      #0
1445 8D051F      STA      TCTR1
1448 8D061F      STA      TCTR2
144B 8D071F      STA      TCTR3
144E 60          RTS
; LNGETX - PREPARE FOR A LONG STAY AWAY AND POSSIBLE EVENTUAL REENTRY.
;-----
;

```

```
144F AD801F    LNGEXT: LDA    HITTP
1452 F003 ^1457    BEQ    LNGOK
1454 4CD064      JMP    SOUND
1457 206E1C    LNGOK: JSR    LSTERA
145A 208110      JSR    PNPNOB    ;TURN PAINT ON (GET PICTURE INTO HGR 1)
145D 209110      JSR    FRZON    ;TURN FREEZE ON
1460 208010      JSR    DTRNOF    ;TURN BRUSH OFF
1463 20D710      JSR    VEROFF    ;TURN VISUALIZE OFF
1466 204A11      JSR    LOCOFF    ;TURN LOCATE OFF
1469 A901        LDA    #1        ;ASSUME THAT OUR DEAR CONTROL DISPLAY
146B 8D831F      STA    CTXFLG    ;WILL BE MUTILATED BY THE STAY AWAY.
146E 60          RTS
```

```
;
; CTRLC - ON CTRLC ABORT SO THAT UPON REENTRY WE RE-INITIALIZE.
;
```

```
146F 204F14    CTRLC: JSR    LNGEXT
1472 20DA0C      JSR    COMAND    ;THIS WILL MAKE US LEAVE WHEN
1475 A901        LDA    #1        ;WE GO INTO MAIN LOOP NEXT TIME.
1477 8D6A1F      STA    INIFLG    ;NOW WE AREN'T INITIALIZED.
147A 60          RTS
```

```
;
; ESORGE & PSORGE - SET/RESET ORIGINS FOR ENTER & MOVE MODES
;
```

```
147B AD691F    ESORGE: LDA    MEFLAG    ;HAVE TO BE IN ENTER MODE
147E 3015 ^1495    BMI    SETBUZ
1480 AD6D1F      LDA    VISFLG    ;CAN'T BE IN VISUALIZE.
1483 1010 ^1495    BPL    SETBUZ
1485 A900        LDA    #0
1487 8D8E1F      STA    EORGX    ;SET ORIGIN VECTOR TO 0
148A 8D8F1F      STA    EORGY    ;WE'LL ADD TO IT AS WE ENTER OUR VECTORS.
148D A210        LDY    ##10
148F A00A        LDY    ##0A    ;NOW MAKE SOME NOISE TO LET THEM KNOW
1491 20E564      JSR    SOUNDZ    ;WE HEARD 'EM.
1494 60          RTS
```

```
1495 20D064    SETBUZ: JSR    SOUND
1498 60          RTS
```

```
1499 AD5D1F    PSORGE: LDA    CSTRTX    ;REMEMBER CURRENT SCREEN LOCATION SO WE CAN
149C 8D8C1F      STA    PORGX    ;GET BACK THERE LATER.
149F AD5E1F      LDA    CSTRTY
14A2 8D8D1F      STA    PORGY
14A5 A220        LDY    ##20    ;SOME NOICE FOR US, TOO
14A7 A010        LDY    ##10
14A9 20E564      JSR    SOUNDZ
14AC 60          RTS
```

```
;
; EGORGE & PGORGE - RESORT TO ENTER / MOVE ORIGINS.
;
```

```
14AD AD691F    EGORGE: LDA    MEFLAG    ;ONCE AGAIN, HAVE TO BE IN ENTER.
14B0 30E3 ^1495    BMI    SETBUZ
14B2 AD8E1F      LDA    EORGX    ;GET THE VECTOR WE'VE BEEN ACCUMULATING
```

```

14B5 8D8A1F      STA      ORIGX      ;AND GO SOCK IT BACK TO 'EM.
14B8 AD8F1F      LDA      EORGY
14BB 8D8B1F      STA      ORIGY
14BE A901        LDA      #1
14C0 8D891F      STA      ORGFLG      ;THIS FLAG IS OUR TICKET TO THE HEART OF THE
14C3 60          RTS          ;ENTER PART OF THE MAIN LOOP.

```

```

;
14C4 206E1C      PSORGE: JSR      LSTERA
14C7 20F61D      JSR      HGHCLR      ;PUT BRUSH BACK ON SCREEN
14CA AD8C1F      LDA      PORGX
14CD 8D5D1F      STA      CSTRTX
14D0 8D991F      STA      SCSTRX
14D3 AD8D1F      LDA      PORGY
14D6 8D5E1F      STA      CSTRTY
14D9 8D9B1F      STA      SCSTRY
14DC 60          RTS

```

```

;
; QWIKIE - START EXECUTION OF QUICK STROKE
;

```

```

14DD AD6D1F      QWIKIE: LDA      VISFLG      ;LET'S REMEMBER WHAT WE WERE DOING
14E0 8D961F      STA      VISHLD
14E3 20D710      JSR      VEROFF      ;VISUALIZE OFF, PLEASE
14E6 AD6B1F      LDA      LOCFLG
14E9 8D951F      STA      LOCHLD
14EC 204A11      JSR      LOCOFF
14EF AD621F      LDA      CSPEED      ;SAVE CURRENT SPEED CAUSE WE'RE GONNA
14F2 8D901F      STA      SPDHLD      ;BLITZ THIS BABY OUT.
14F5 20ED0F      JSR      BLITZ
14F8 AD681F      LDA      DRWFLG      ;DRAW REGARDLESS OF WHETHER BRUSH IS DOWN/UP.
14FB 8DA61F      STA      DRWHLD
14FE 207B10      JSR      DTRNON
1501 A901        LDA      #1
1503 8D851F      STA      QSTXEQ      ;SET THE 'EXECUTING QUICKSTROKE' FLAG, WHICH
1506 AD921F      LDA      BSPTR      ;BYPASSES EVERYTHING !!
1509 8D581F      STA      SPTR       ;SET STROKE BUFFER POINTER BACK TO BEGINNING
150C 60          RTS          ;OF STROKE. QUICKSTROKE WILL TERMINATE WHEN
                                ;SAVVEC ROUTINE DETECTS THAT SPTR = SNMPTS.
                                ;THEN FLAG WILL BE TURNED OFF, VERIFY TURNED
                                ;BACK ON, ETC.

```

```

;
; QWIKI2 - EXECUTE QUICKSTROKE AND RETURN TO STARTING POINT.
;

```

```

150D 20DD14      QWIKI2: JSR      QWIKIE      ;DO THE USUAL
1510 A9FF        LDA      #-1      ;SET EXECUTING QUICKSTROKE TYPE 2
1512 8D851F      STA      QSTXEQ
1515 209914      JSR      PSORGE      ;REMEMBER CURRENT LOCATION ON SCREEN
1518 60          RTS

```

```

;
; ARROWS - LARROW MOVES POINTER TOWARD BEGINNING OF PATTERN, RIGHT ARROW
;          TOWARD END OF PATTERN. ARROWS APPLY IN VISUALIZE, ENTER AND
;          PAINT MODES.
;

```

```

1519 AD6D1F      RARROW: LDA    VISFLG      ;IN VISUALIZE?
151C 3021 ^153F      BMI    RARNVI      ;NOPE
151E AC921F      LDY    BSPTR
1521 F064 ^1587      BEQ    ARBUZZ      ;PTR IS AT BEGINNING OF STROKE - BUZZ EM
1523 88          DEY
1524 8C921F      STY    BSPTR
1527 C8          INY
1528 A900          LDA    #0
152A 38          SEC
152B F174          SBC    [BBASEX],Y      ;GET VECTOR WE'RE ADDING TO LIST
152D 8D3B1F      STA    TEMPX
1530 A900          LDA    #0
1532 38          SEC
1533 F176          SBC    [BBASEY],Y
1535 8D3C1F      STA    TEMPY
1538 208A16      JSR    MOVSTT      ;MOVE STARTING LOCATION BY VECTOR
153B 206E1C      JSR    LSTERA
153E 60          RTS

;
153F AD691F      RARNVI: LDA    MEFLAG      ;ENTERING?
1542 1021 ^1565      BPL    RAREN      ;YUP
1544 AC911F      LDY    TBSPTR      ;SAME DEAL:
1547 F03E ^1587      BEQ    ARBUZZ
1549 88          DEY
154A 8C911F      STY    TBSPTR
154D C8          INY
154E A900          LDA    #0
1550 38          SEC
1551 F168          SBC    [TBASEX],Y      ;GET VECTOR WE'RE RE-ADDING TO LIST.
1553 8D3B1F      STA    TEMPX
1556 A900          LDA    #0
1558 38          SEC
1559 F16A          SBC    [TBASEY],Y
155B 8D3C1F      STA    TEMPY
155E 208A16      JSR    MOVSTT      ;AND ADJUST PATTERN STARTING PT.
1561 206E1C      JSR    LSTERA
1564 60          RTS

;
1565 AC571F      RAREN: LDY    TPTR
1568 C8          INY
1569 CC2A1F      CPY    MAXPTS
156C B019 ^1587      BCS    ARBUZZ
156E 8C571F      STY    TPTR
1571 88          DEY      ;NOW ADD VECTOR WE'RE SKIPPING INTO THE
1572 AD8E1F      LDA    EORGX      ;TILL OF THE ORIGINATE VECTOR.
1575 38          SEC
1576 F168          SBC    [TBASEX],Y
1578 8D8E1F      STA    EORGX
157B AD8F1F      LDA    EORGY
157E 38          SEC
157F F16A          SBC    [TBASEY],Y
1581 8D8F1F      STA    EORGY
1584 4CE915      JMP    ARCHEK      ;LET'S SEE ABOUT UPDATING # OF PTS

;
1587 4CD064      ARBUZZ: JMP    SOUND

```

```

;
;
158A AD6D1F LARROW: LDA VISFLG ;VISUALIZING?
158D 301D ^15AC BMI LARNVI ;NOPE
158F AC921F LDY BSPTR
1592 C8 INY ;WE HAVE TO MAKE SURE THAT POINTER WILL
1593 CC2E1F CPY SNMPTS ;STILL BE IN RANGE AFTER WE HAVE INCREMENTED IT
1596 B0EF ^1587 BCS ARBUZZ
1598 8C921F STY BSPTR
159B B174 LDA [BBASEX],Y ;GET VECTOR WE'RE REMOVING AND ADJUST
159D 8D3B1F STA TEMPX
15A0 B176 LDA [BBASEY],Y
15A2 8D3C1F STA TEMPY
15A5 208A16 JSR MOVSTT ;STARTING PT BY THAT MUCH.
15A8 206E1C JSR LSTERA
15AB 60 RTS

;
15AC AD691F LARNVI: LDA MEFLAG ;ENTERNG?
15AF 101D ^15CE BPL LAREN ;YUP
15B1 AC911F LDY TBSPTR
15B4 C8 INY
15B5 CC2B1F CPY NUMPTS
15B8 B0CD ^1587 BCS ARBUZZ
15BA 8C911F STY TBSPTR
15BD B168 LDA [TBASEX],Y
15BF 8D3B1F STA TEMPX
15C2 B16A LDA [TBASEY],Y
15C4 8D3C1F STA TEMPY
15C7 208A16 JSR MOVSTT
15CA 206E1C JSR LSTERA
15CD 60 RTS

;
15CE AC571F LAREN: LDY TPTR
15D1 F0B4 ^1587 BEQ ARBUZZ ;BUZZ 'EM
15D3 88 DEY
15D4 AD8E1F LDA EORGX ;TAKE THIS VECTOR OUT OF THE ORIGINATE
15D7 18 CLC ;VECTOR.
15D8 7168 ADC [TBASEX],Y
15DA 8D8E1F STA EORGX
15DD AD8F1F LDA EORGY
15E0 18 CLC
15E1 716A ADC [TBASEY],Y
15E3 8D8F1F STA EORGY
15E6 8C571F STY TPTR
15E9 AD651F ARCHEK: LDA TAMFLG ;LET'S SEE ABOUT UPDATING THE # OF PTS.
15EC 3003 ^15F1 BMI RARNLK
15EE AC2A1F LDY MAXPTS ;IT'S LOCKED - USE MAX # PTS.
15F1 8C2B1F RARNLK: STY NUMPTS
15F4 98 TYA
15F5 A0FF LDY #$FF
15F7 9168 STA [TBASEX],Y ;STORE IT IN PATTERN, TOO.
15F9 20AD1B JSR TSZDSP
15FC 206E1C JSR LSTERA
15FF 60 RTS
;

```

```

; PNMHIT - HANDLE CHANGES IN PAINTING MODE
;
;
1600 B91D    PNTADS: DW    PAINT1    ;NORMAL PAINTING
1602 C31D    DW    PAINT2    ;NO CHANGE PAINTING
1604 CD1D    DW    PAINT3    ;BLACK=>COLORS, COLORS=>WHITE
1606 DE1D    DW    PAINT4    ;WHITE=>COLORS, COLORS=>BLACK
1608 EF1D    DW    PAINT5    ;COMPLEMENT
;
160A 2907    PNMHIT: AND    #7
160C 8D7E1F  STA    TEMP
160F 09A0    ORA    #$A0      ;MAKE IT ASCII
1611 8D931F  STA    PNMFL6
1614 A0A7    LDY    #TXPNM
1616 20BA17  JSR    DPAGE2
1619 AD541F  LDA    CUMODE    ;IF WE'RE NOT IN PICTURE MODE, THEN DON'T
161C 3018 ^1636 BMI    PNMEXT  ;INSTITUTE THE CHANGE.
161E AD7E1F  LDA    TEMP
1621 8D941F  STA    PNMIND
1624 AD941F  PNMSET: LDA    PNMIND
1627 18      CLC
1628 2A      ROL    A          ;DOUBLE IT
1629 A8      TAY
162A B9FE15  LDA    PNTADS-2,Y ;GET LOW ORDER BYTE
162D 8DB71D  STA    PNTJMP      ;SET UP ADDRESS FOR HPLT TO USE.
1630 B9FF15  LDA    PNTADS-1,Y
1633 8DB81D  STA    PNTJMP+1
1636 60      PNMEXT: RTS
; MOVROW - ROUTINE TO MOVE ONE SCREEN ROW TO ANOTHER
;          CALLED BY APPLESOFT MENU PROGRAMS.
;
;
1637 AD801F  MOVROW: LDA    HITTP
163A F003 ^163F BEQ    MOVOK
163C 4CD064  JMP    SOUND
163F AD3E1F  MOVOK: LDA    XCHAR1    ;GET FROM ROW
1642 8525    STA    CURSRY
1644 A900    LDA    #0
1646 8524    STA    CURSRX
1648 2022FC  JSR    CURSET    ;DO BASE COMPUTATION
164B A528    LDA    BASL    ;NOW STEAL THE ADDRESS.
164D 8560    STA    FROM
164F A529    LDA    BASH
1651 8561    STA    FROM+1
1653 AD3F1F  LDA    XCHAR2    ;GET THE TO ROW.
1656 8525    STA    CURSRY
1658 2022FC  JSR    CURSET    ;COMPUTE THAT ADDRESS
165B A028    LDY    #40      ;MOVE 40 CHARACTERS (ONE ROW)
165D B160    MOVLOP: LDA    [FROM],Y
165F 9128    STA    [BASL],Y
1661 88      DEY
1662 10F9 ^165D BPL    MOVLOP
1664 60      RTS
;
; SETQWK - EXTERNAL KB HIT CALL TO SET QUICKSTROKE = CURRENT STROKE.

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;
;
1665 AD001F SETQWK: LDA HITTP
1668 F003 ^166D BEQ SETQOK
166A 4CD064 JMP SOUND
166D 206E1C SETQOK: JSR LSTERA
1670 A000 LDY #0
1672 B16C SETQL1: LDA [SBASEX],Y
1674 9174 STA [BBASEX],Y
1676 C8 INY
1677 D0F9 ^1672 BNE SETQL1
1679 B16E SETQL2: LDA [SBASEY],Y
167B 9176 STA [BBASEY],Y
167D C8 INY
167E D0F9 ^1679 BNE SETQL2
1680 8C921F STY BSPTR ;ZILCH QUICKSTROKE BASE POINTER
1683 88 DEY
1684 B16C LDA [SBASEX],Y ;GET PATTERN LENGTH
1686 8D2E1F STA SNMPTS
1689 60 RTS

;
;
=====
;
; END OF KB HIT ROUTINES
;
=====
;
; MOVSTT - ROUTINE TO MOVE STARTING POINT BY VECTOR (TEMPX,TEMPY)
;
;
168A 18 MOVSTT: CLC
168B A000 LDY #0 ;ASSUME POSITIVE VECTOR
168D AD3C1F LDA TEMPY
1690 1002 ^1694 BPL ADVNM1 ;YUP, IT'S POSITIVE
1692 A003 LDY #3 ;SET HIGH ORDER BITS FOR A NEG NUMBER.
1694 6D9B1F ADVNM1: ADC SCSTRY
1697 8D9B1F STA SCSTRY ;LOW ORDER
169A 297F AND #7F ;KEEP ( 128 FOR 8 BIT REGISTER.
169C 8D5E1F STA CSTRTY
169F 98 TYA ;GET HIGH ORDER STUFF
16A0 6D9C1F ADC SCSTRY+1 ;ADD TO PREVIOUS HIGH ORDER
16A3 2903 AND #3 ;KEEP IT TO 10 BITS (+/- 512)
16A5 8D9C1F STA SCSTRY+1
16A8 EE7F1F INC CHGFLG ;WE CHANGED LOCATIONS THEORETICALLY
16AB 18 CLC
16AC A000 LDY #0
16AE AD3B1F LDA TEMPX ;NOW SAME FOR X
16B1 1002 ^16B5 BPL ADVNM2
16B3 A003 LDY #3
16B5 6D991F ADVNM2: ADC SCSTRX
16B8 8D991F STA SCSTRX
16BB 8D5D1F STA CSTRTX
16BE 98 TYA
16BF 6D9A1F ADC SCSTRX+1
16C2 2903 AND #3
16C4 8D9A1F STA SCSTRX+1
16C7 AD981F LDA WRPIND ;IF WRAPAROUND IS ON, THEN CLEAR HIGH ORDER

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16CA 3003 ^16CF      BMI    ADVNOC      ;BITS SO WE REMAIN ON SCREEN.
16CC 20F61D          JSR    HGHCLR
16CF 20121B      ADVNOC: JSR    BASDSP      ;DISPLAY SCREEN LOCATION.
16D2 60          RTS

;
;
;
;
;      DOFLGS - FROM SAVED FLAGS, REWRITE FLAG CHARACTERS IN CONTROL SCREEN
;
;
16D3 AD821F      DOFLGS: LDA    TXFLG      ;CHECK WHERE WE'RE ALLOWED TO WRITE.
16D6 3005 ^16DD      BMI    DOFTP2      ;TOP 2 LINES ONLY
16D8 D006 ^16E0      BNE    DOFNNN      ;CAN'T DO ANY !
16DA 200E17          JSR    DOFLG2      ;DO BOTTOM 2 LINES
16DD 20E116      DOFTP2: JSR    DOFLG1      ;DO TOP 2 LINES
16E0 60          DOFNNN: RTS

;
;
16E1 20FB1A      DOFLG1: JSR    USEDf
16E4 20321B          JSR    BASDF
16E7 20A61B          JSR    TSZDF
16EA 20831B          JSR    SSZDF
16ED AD6D1F          LDA    VISFLG
16F0 A08A          LDY    #TXVER
16F2 20AC17          JSR    DPAGE1
16F5 AD6B1F          LDA    LOCFLG
16F8 A094          LDY    #TXLOC
16FA 20AC17          JSR    DPAGE1
16FD AD671F          LDA    FRZFLG
1700 A09E          LDY    #TXFREZ
1702 20AC17          JSR    DPAGE1
1705 AD6E1F          LDA    PNTFLG
1708 A0A7          LDY    #TXPNT
170A 20AC17          JSR    DPAGE1
170D 60          RTS

;
;
170E AD701F      DOFLG2: LDA    QSTFLG
1711 A00A          LDY    #TXQST
1713 20BA17          JSR    DPAGE2
1716 AD741F          LDA    XCRUISE
1719 A014          LDY    #TXHLDX
171B 20BA17          JSR    DPAGE2
171E AD751F          LDA    YCRUISE
1721 A016          LDY    #TXHLDY
1723 20BA17          JSR    DPAGE2
1726 AD7A1F          LDA    BCOLOR
1729 09B0          ORA    #B0
172B A01E          LDY    #TXCOLR
172D 20BA17          JSR    DPAGE2
1730 AD681F          LDA    DRWFLG
1733 A027          LDY    #TXDRWF
1735 20BA17          JSR    DPAGE2
1738 AD711F          LDA    WRPFLG
173B A08A          LDY    #TXWRP
173D 20BA17          JSR    DPAGE2
1740 AD721F          LDA    XNEG

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1743 A094      LDY      #TXNEGX
1745 20BA17    JSR      DPAGE2
1748 AD731F    LDA      YNEG
174B A096      LDY      #TXNEGY
174D 20BA17    JSR      DPAGE2
1750 AD691F    LDA      MEFLAG
1753 A09E      LDY      #TXMODE
1755 20BA17    JSR      DPAGE2
1758 AD931F    LDA      PNMFLG
175B A0A7      LDY      #TXPNM
175D 20BA17    JSR      DPAGE2
1760 60        RTS

;
;
1761 AD        DB      $AD ;==FLAK
;
;
; RSETUP - GET THINGS ROLLING AGAIN UPON REENTRY.
;
;
1762 D8        RSETUP: CLD
1763 AD10C0     LDA      $C010      ;CLEAR KB FLAG
1766 20C417    JSR      GPAGE1     ;SET UP PTRS TO CTL DISPLAY
1769 20041A    JSR      WRTEXT     ;RESTORE CTL DISPLAY
176C 207E17    JSR      RSET1      ;SET UP ZERO PAGE POINTERS
176F 20D316    JSR      DOFLGS     ;SET UP FLAGS IN CTL DISPLAY
1772 AD001F    LDA      REMOTE     ;STORE WHAT REMOTE FLAG WAS UPON ENTRY
1775 8D011F    STA      REMTMP     ;IN REMTMP, SO WE CAN PLAY WITH REMTMP.
1778 A901      LDA      #1
177A 8D611F    STA      HCOUNT
177D 60        RTS

;
; RSET1 - ROUTINE TO SET UP 0 PAGE POINTER
; RSET 1 IS CALLED WHEN STARTING, REENTERING OR EXECUTING AN EXTERNAL CALL.
;
;
177E AD3E1F    RSET1: LDA      XCHAR1      ;SAVE WHAT'S IN XCHAR1
1781 48        PHA
1782 20C417    JSR      GPAGE1     ;MAKE SURE POINTER TO CONTROL DISPLAY IS
;INTACT FOR BENEFIT OF EXTERNAL CALLS VIA EXTCA
1785 ACB71F    LDY      APATTS+16    ;SET UP STROKE BUFFER
1788 8474      STY      BBASEX
178A 8476      STY      BBASEY      ;LOW ORDER BYTE
178C ACB81F    LDY      APATTS+17
178F 8475      STY      BBASEX+1    ;HIGH ORDER BYTE
1791 C8        INY
1792 8477      STY      BBASEY+1
1794 A900      LDA      #0          ;SET HIT TYPE = EXTERNAL
1796 8D801F    STA      HITTP       ;SO WE CAN PLAY AROUND.
1799 AD5B1F    LDA      CURSRC      ;IF CURRENT STROKE IS A PATTERN
179C F003 ^17A1 BEQ      #0+5       ;THEN SET UP POINTERS TO PATTERN BUFFER.
179E 20E213    JSR      SRSETB
17A1 AD591F    LDA      CURTRG
17A4 202A14    JSR      TRSETB      ;SET UP POINTERS TO TARGET PATTERN BUFFER.
17A7 68        PLA

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17A8 8D3E1F      STA      XCHAR1      ;RESTORE XCHAR1
17AB 60          RTS

;
; DPAGE1 & 2 TAKE CARE OF WRITING INTO THE TEXT AREA.
;
;
; THE CHARACTER TO BE DISPLAYED SHOULD BE IN A, THE OFFSET INTO
; THE TEXT AREA SHOULD BE IN Y.
;
17AC 48          DPAGE1: PHA
17AD AD821F      LDA      TXTFLG      ;SHOULD WE BE WRITING IN TEXT AREA?
17B0 C901        CMP      #1          ;OK TO WRITE IN TOP 2 LINES?
17B2 F004 ^17B8 BEQ      D1WRND      ;NOPE
17B4 68          PLA
17B5 9164        STA      [CPAGE1],Y
17B7 60          RTS
17B8 68          D1WRND: PLA
17B9 60          RTS

;
17BA 48          DPAGE2: PHA
17BB AD821F      LDA      TXTFLG
17BE D0F8 ^17B8 BNE      D1WRND
17C0 68          PLA
17C1 9166        STA      [CPAGE2],Y
17C3 60          RTS

;
; GPAGE1 REESTABLISH CONTROL PORTION OF SCREEN.
;
;
17C4 A906        GPAGE1: LDA      #$06      ;SET PTRS TO PAGE 1 TEXT
17C6 8565        STA      CPAGE1+1
17C8 A907        LDA      #$07
17CA 8567        GMP12: STA      CPAGE2+1
17CC A950        LDA      #$50      ;LOW BYTE IS 50 FOR BOTH SETS OF LINES
17CE 8564        STA      CPAGE1
17D0 8566        STA      CPAGE2
17D2 60          RTS

;
17D3 AD          DB      $AD ;==FLAK

;
; GETPAD - READ PADDLES, AND RETURN 3 SETS OF SCALED VALUES.
;
;
17D4 AA          GETPAD: TAX      ;GET PADDLE TO READ THIS TIME
17D5 201EFB      JSR      PREAD      ;VALUE COMES BACK IN Y REGISTER.
17D8 98          TYA
17D9 D002 ^17DD  BNE      GETPNZ      ;IF IT'S 0, MAKE IT 1.
17DB 0901        ORA      #1
17DD 9D481F      GETPNZ: STA      PADFUL,X ;STOW 1-255 VALUE.
17E0 6A          ROR      A          ;DIVIDE BY 32
17E1 6A          ROR      A
17E2 6A          ROR      A
17E3 6A          ROR      A

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650

750

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17E4 6A          ROR A
17E5 2907        AND    #$7
17E7 18          CLC
17E8 6901        ADC    #1          ;MAKE IT 1-8.
17EA 9D4C1F      STA    PAD18,X    ;STOW 1-8 VALUE.
17ED 98          TYA
17EE A000        LDY    #0          ;NOW WE'LL DIVIDE BY 32 TO GET -3 TO +4 VALUE.
17F0 38          SB32: SEC
17F1 E920        SBC    #32
17F3 9004 ^17F9  BCC    HITMIN      ;BOTTOMED OUT
17F5 C8          INY
17F6 4CF017      JMP    SB32
17F9 98          HITMIN: TYA        ;GET THE COUNT, BROTHER
17FA 38          SEC
17FB E903        SBC    #3          ;SLIDE TOWARDS THE NEGATIVE.
17FD 9D501F      STA    PADVEC,X    ;STOW 'ER AWAY.
1800 A922        LDA    #$22
1802 20A8FC      JSR    ADELAY      ;TWIDDLE THUMB FOR A WHILE TO ALLOW SAMPLING
1805 60          RTS              ;CIRCUITRY TO SETTLE.

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;
; APLC - THIS ROUTINE TAKES THE VALUES READ FROM THE PADDLES AND APPLIES
; THEM 'LOCALLY'. 'LOCALLY' MEANS THAT ONLY THE REGISTERS THAT ARE
; DEPENDENT ON THE PADDLES ARE AFFECTED.
;
; -----
;

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1806 AE651F      APLC: LDX    TAMFLG      ;WHAT IS BRUSH SIZING MODE?
1809 3014 ^181F  BMI    APLNPD
180B BD471F      LDA    PADFUL-1,X    ;IT'S THE PADDLES ! WHOPEE !
180E CD911F      CMP    TBSPTR
1811 B003 ^1816  BCS    APLOK1      ; PADDLE )= TBSPTR
1813 AD911F      LDA    TBSPTR
1816 BD2A1F      APLOK1: STA    MAXPTS
1819 BD2B1F      STA    NUMPTS
181C 20AD1B      JSR    TSZDSP
181F AE631F      APLNPD: LDX    SAMFLG      ;WHAT IS THE STROKE SIZING MODE?
1822 3011 ^1835  BMI    APLNP1
1824 BD471F      LDA    PADFUL-1,X    ;IT'S THE PADDLES.
1827 CD921F      CMP    BSPTR
182A B003 ^182F  BCS    APLOK2
182C AD921F      LDA    BSPTR
182F BD2E1F      APLOK2: STA    SNMPTS
1832 208A1B      JSR    SSZDSP
1835 AE761F      APLNP1: LDX    COLFLG      ;WHAT'S THE COLOR SELECTION MODE?
1838 F00A ^1844  BEQ    APLNP2
183A BD4B1F      LDA    PAD18-1,X    ;IT'S THE PADDLES, BOOHOO.
183D AA          TAX              ;LOOK UP THE COLOR
183E BD171F      LDA    DCLOOK-1,X
1841 20820F      JSR    COLCKB      ;DO THE COLOR CHANGE
1844 AD851F      APLNP2: LDA    GSTXEQ      ;ARE WE DOING QUICK STROKE?
1847 F03C ^1885  BEQ    APLNQS      ;NOPE
1849 AC581F      LDY    SPTR        ;CHECK IF WE'RE DONE QUICK STROKE.
184C CC2E1F      CPY    SNMPTS
184F 9077 ^18C8  BCC    APLEXT      ;NOPE
1851 AD851F      LDA    GSTXEQ      ;ARE WE EXECUTING QUICKSTROKE TYPE 2.
1854 1003 ^1859  BPL    #0+5        ;NOPE

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1856 20C414      JSR     PGORGE      ;YES, GO BACK TO STARTING SCREEN LOCATION
1859 A000        LDY     #0
185B 8C851F      STY     GSTXEQ      ;TURN OF DOING QUICKSTROKE FLAG.
185E AC921F      LDY     BSPTR
1861 8C581F      STY     SPTR        ;SET STROKE BUFFER TO BEG OF CURRENT STROKE.
1864 AD961F      LDA     VISHLD      ;RESTORE VISUALIZE MODE FLAG
1867 3003 ^186C  BMI     APLNVI
1869 20D210      JSR     VERHPT      ;TURN VISUALIZE BACK ON
186C AD951F      APLNVI: LDA     LOCHLD ;RESTORE LOCATE FLAG
186F 3003 ^1874  BMI     APLNL2
1871 203911      JSR     LOCON
1874 AD901F      APLNL2: LDA     SPDHLD ;RESTORE FORMER SPEED
1877 8D3E1F      STA     XCHAR1
187A 20D40F      JSR     UPDSPD
187D ADA61F      LDA     DRWHLD      ;RESTORE BRUSH UP/DOWN FLAG.
1880 1003 ^1885  BPL     APLNGS      ;BRUSH WAS ON, LEAVE IT ON.
1882 208010      JSR     DTRNOF
1885 AD6B1F      APLNGS: LDA     LOCFLG ;ARE WE IN LOCATE MODE?
1888 301E ^18A8  BMI     APLNLO      ;NOPE
188A AD6C1F      LDA     CURLOC      ;ARE PADDLES DOING THE LOCATION?
188D D019 ^18A8  BNE     APLNLO      ;NOPE, KB IS. USEX & USEY HAVE ALREADY BEEN
;                                     ;FIGURED.
188F AD891F      LDA     ORGFLG      ;IF COMMAND WAS GIVEN TO RE-ORIGINATE
1892 D034 ^18C8  BNE     APLEXT      ;WHILE ENTERING PATTERN, THEN DON'T RUIN
;                                     ;THAT VECTOR WITH LOCATE VECTOR.
1894 AD501F      LDA     PADVEC      ;GET X VECTOR FROM PADDLE 1.
1897 8D441F      STA     USEX
189A AD511F      LDA     PADVEC+1    ;GET Y VECTOR FROM PADDLE 2.
189D 49FF      EOR     ##FF        ;NEGATE IT
189F 18         CLC
18A0 6901      ADC     #1
18A2 8D451F      STA     USEY
18A5 4CC818      JMP     APLEXT
;
18A8 AD5B1F      APLNLO: LDA     CURSRC ;ARE PADDLES CURRENT STROKE?
18AB D01B ^18C8  BNE     APLEXT
18AD AD741F      LDA     XCRUISE    ;YES. IS X OVERRIDE ON?
18B0 1006 ^18B8  BPL     APLXON      ;YUP, PADDLE HAS BEEN OVERRIDEN.
18B2 AD501F      LDA     PADVEC      ;NOPE, USE PADDLE VALUE FOR X VECTOR.
18B5 8D461F      STA     BUSEX
18B8 AD751F      APLXON: LDA     YCRUISE
18BB 100B ^18C8  BPL     APLEXT
18BD AD511F      LDA     PADVEC+1
18C0 49FF      EOR     ##FF        ;NEGATE
18C2 18         CLC
18C3 6901      ADC     #1
18C5 8D471F      STA     BUSEY
18C8 60         APLEXT: RTS
;
;
; GETVEC - THIS ROUTINE TAKES THE DATA FROM THE VARIOUS REGISTERS SET UP
; BY THE KB HITS AND READING OF THE PADDLES, AND APPLIES IT,
; COMING UP WITH A VECTOR, (USEX, USEY) TO BE PROCESSED BY
; SAVVEC AND THEN POSSIBLY PASSED ONTO APPLICATION TO A
; TARGET.

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;
;
18C9 A900      GETVEC: LDA    #0          ;CLEAR UPDATE STROKE BUFFER FLAG THAT SAVVEC
18CB 8D861F      STA    STKFLG        ;WILL BASE SOME DECISIONS ON.
18CE AD611F      LDA    HCOUNT        ;DON'T UPDATE IF WE'RE NOT ABOUT TO EXECUTE
18D1 F003 ^18D6  BEQ    GTVDOK        ;MAIN LOOP.
18D3 4C6419      GTVESC: JMP    GTVBYE        ;LET'S GET THE FUCK OUT OF HERE.
18D6 AD851F      GTVDOK: LDA    QSTXEQ        ;DON'T UPDATE IF WE'RE DOING A QUICKSTROKE.
18D9 F013 ^18EE  BEQ    GTVNGS        ;NOT DOING A QUICK STROKE
18DB AC581F      LDY    SPTR          ;WE'RE DOING A QUICKSTROKE, LET'S GET THE
18DE B174        LDA    [BASEX],Y        ;NEXT VECTOR FROM THE STROKE BUFFER.
18E0 8D441F      STA    USEX
18E3 B176        LDA    [BASEY],Y
18E5 8D451F      STA    USEY
18E8 EE581F      INC    SPTR
18EB 4C6419      JMP    GTVBYE
18EE AD891F      GTVNGS: LDA    ORGFLG        ;ORIGINATE IN PATTERN COMMAND GIVEN?
18F1 F00F ^1902  BEQ    GTVNOR        ;NOPE
18F3 AD8A1F      LDA    ORIGX          ;GET VECTOR PREPARED BY THE EGORGE ROUTINE.
18F6 8D441F      STA    USEX
18F9 AD8B1F      LDA    ORIGY
18FC 8D451F      STA    USEY
18FF 4C6419      JMP    GTVBYE        ;THAT'S ALL FOLKS.
1902 AD6B1F      GTVNOR: LDA    LOCFLG        ;DON'T UPDATE IF IN LOCATE MODE.
1905 10CC ^18D3  BPL    GTVESC        ;GET OUT, WE ALREADY HAVE A LOCATE VECTOR.
1907 AD671F      LDA    FRZFLG        ;DONT UPDATE IF FREEZE IS ON.
190A 1008 ^1914  BPL    GTVNFR
190C AD701F      LDA    QSTFLG        ;IS QUICK MODE ON?
190F 3003 ^1914  BMI    GTVNFR        ;NOPE
1911 EE861F      INC    STKFLG        ;OK, WE'LL DO IT.
1914 AD5B1F      GTVNFR: LDA    CURSRC
1917 F03F ^1958  BEQ    GETVEX
1919 AC871F      LDY    OPTR          ;CURRENT STROKE SOURCE IS A PATTERN, LET'S GET
191C B16C        LDA    [BASEX],Y
191E AA          TAX
191F B16E        LDA    [BASEY],Y
1921 CC881F      CPY    ONMPTS        ;A VECTOR FROM IT. FIRST CHECK TO MAKE SURE
1924 9005 ^192B  BCC    STL0K        ;WE'RE NOT PAST END OF SOURCE PATTERN.
1926 A0FF        LDY    #255
1928 8C871F      STY    OPTR
192B A8          STL0K: TAY
192C AD671F      LDA    FRZFLG        ;IF WE'RE FROZEN, THEN DON'T INCREMENT PTR
192F 1003 ^1934  BPL    GTVNI        ;TO SOURCE PATTERN.
1931 EE871F      INC    OPTR        ;SO WE GET THE NEXT VECTOR NEXT TIME.
1934 AD721F      GTVNI: LDA    XNEG        ;IS NEGATE X ON?
1937 3005 ^193E  BMI    GETNXX        ;NEGATE X IS NOT ON.
1939 8A          TXA
193A 49FF        EOR    #FF          ;NEGATE IT
193C AA          TAX
193D E8          INX
193E AD731F      GETNXX: LDA    YNEG
1941 3005 ^1948  BMI    GETNNY
1943 98          TYA
1944 49FF        EOR    #FF
1946 A8          TAY

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1947 C8          INY
1948 AD741F      GETNNY: LDA    XCRUISE      ;HOLD X ON?
194B 1003 ^1950 BPL      GETVCX      ;YES, BUSEX HAS BEEN SET BY PRIOR KB HITS.
194D 8E461F      STX      BUSEX
1950 AD751F      GETVCX: LDA    YCRUISE
1953 1003 ^1958 BPL      GETVEX
1955 8C471F      STY      BUSEY
1958 AD461F      GETVEX: LDA    BUSEX      ;SO DON'T TRASH THEM OUT NOW.
195B 8D441F      STA      USEX
195E AD471F      LDA      BUSEY
1961 8D451F      STA      USEY
1964 60          GTVBYE: RTS
;
; SAVVEC - SAVE VECTOR IN STROKE BUFFER IF IN VISUALIZE MODE;
;          GET VECTOR OUT OF STROKE BUFFER IN EXECUTING A QUICK
;          STROKE. IN ANY CASE, EXIT WITH USEX & USEY.
;
;-----
;
1965 AC581F      SAVVEC: LDY      SPTR      ;GET HOOK INTO STROKE BUFFE
1968 AD6D1F      LDA      VISFLG      ;VISUALIZE ON?
196B 3066 ^19D3  BMI      SVVNVI      ;NOPE
196D AD861F      LDA      STKFLG      ;SHOULD WE UPDATE THE STROKE BUFFER?
1970 F030 ^19A2  BEQ      SVVNUP      ;NOPE
1972 AD5B1F      LDA      CURSRC      ;IF CURRENT STROKE IS A PATTERN, THEN DON'T
1975 D008 ^197F  BNE      SVVNPB      ;IGNORE 0 VECTORS.
1977 AD461F      LDA      BUSEX      ;NOW CHECK TO MAKE SURE THAT VECTOR IS
197A 0D471F      ORA      BUSEY      ;NON-ZERO. CAUSE WE DON'T WANT TO ENTER
197D F023 ^19A2  BEQ      SVVNUP      ;ZERO VECTORS. BRANCH IF ZERO.
197F 206E1C      SVVNPB: JSR      LSTERA  ;ERASE LAST VISUALIZATION
1982 AC581F      LDY      SPTR
1985 AD461F      LDA      BUSEX
1988 9174          STA      [BBASEX],Y
198A AD471F      LDA      BUSEY
198D 9176          STA      [BBASEY],Y
198F EE581F      INC      SPTR
1992 CC2E1F      CPY      SNMPTS      ;PAST END?
1995 900B ^19A2  BCC      SVVNUP
1997 A000          LDY      #0          ;YUP, REINIT ALL PTRS.
1999 8C871F      STY      OPTR      ;SOURCE PATTERN
199C AC921F      LDY      BSPTR
199F 8C581F      STY      SPTR
19A2 20EB1A      SVVNUP: JSR      USEDSP  ;DISPLAY VECTOR TO BE APPLIED
19A5 A574          LDA      BBASEX
19A7 18          CLC
19A8 6D921F      ADC      BSPTR      ;NOW SET UP FOR DISPLAY OF VISUALIZATION.
19AB 8570          STA      CBASEX
19AD A575          LDA      BBASEX+1  ;WE ONLY WANT TO SHOW THAT PORTION OF THE
19AF 8571          STA      CBASEX+1  ;STROKE TO THE RIGHT OF BSPTR.
19B1 A576          LDA      BBASEY
19B3 18          CLC
19B4 6D921F      ADC      BSPTR
19B7 8572          STA      CBASEY
19B9 A577          LDA      BBASEY+1
19BB 8573          STA      CBASEY+1
19BD AD2E1F      LDA      SNMPTS

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19C0 38          SEC
19C1 ED921F      SBC      BSPTR
19C4 8D2F1F      STA      CURPTS
19C7 CD2C1F      CMP      LNMPTS      ;IF IT'S NOT THE SAME # OF PTS WE DISPLAYED
19CA F006 ^19D2  BEQ      SVVNC1      ;LAST TIME, THEN SET THE CHANGE FLAG.
19CC 208A1B      JSR      SSZDSP
19CF EE7F1F      INC      CHGFLG
19D2 60          SVVNC1: RTS
;
19D3 20EB1A      SVVNC1: JSR      USEDSP      ;DISPLAY WHAT WE WILL APPLY
19D6 A568        LDA      TBASEX      ;SET UP FOR DISPLAY OF BRUSH
19D8 18          CLC
19D9 6D911F      ADC      TBSPTR
19DC 8570        STA      CBASEX
19DE A569        LDA      TBASEX+1
19E0 8571        STA      CBASEX+1
19E2 A56A        LDA      TBASEY
19E4 18          CLC
19E5 6D911F      ADC      TBSPTR
19E8 8572        STA      CBASEY
19EA A56B        LDA      TBASEY+1
19EC 8573        STA      CBASEY+1
19EE AD2B1F      LDA      NUMPTS
19F1 38          SEC
19F2 ED911F      SBC      TBSPTR
19F5 8D2F1F      STA      CURPTS
19F8 CD2C1F      CMP      LNMPTS      ;IF WE'RE NOT DISPLAYING SAME # OF PTS AS
19FB F006 ^1A03  BEQ      SVVNC2      ;LAST TIME, THEN SET THE CHANGE FLAG.
19FD 20AD1B      JSR      TSZDSP
1A00 EE7F1F      INC      CHGFLG
1A03 60          SVVNC2: RTS
;
;
;
; WRTEXT - WRITE TEXT OF CTL DISPLAY INTO BOTTOM 4 LINES OF TEXT SCREEN,
; PROVIDED THAT TXTFLG IS SET APPROPRIATELY.
; -----
;
1A04 2084FE      WRTEXT: JSR      SETNRM      ;SET DISPLAY TEXT MODE = NORMAL
1A07 AD821F      LDA      TXTFLG      ;GET TEXT WRITING DIRECTIONS
1A0A 8D831F      STA      CTXFLG      ;WHAT WE ARE DIRECTED TO WRITE CAN BE RELIED ON
1A0D 3005 ^1A14  BMI      WRTOP2      ;WRITE TOP 2 LINES ONLY.
1A0F D006 ^1A17  BNE      WRNONE      ;WRITE NO LINES
1A11 20321A      JSR      WRCTL2      ;WRITE BOTTOM 2 LINES
1A14 20181A      WRTOP2: JSR      WRCTL1      ;WRITE TOP 2 LINES.
1A17 60          WRNONE: RTS
;
; WRCTL 1 & 2 - WRITE TOP & BOTTOM 2 PAIRS OF LINES.
; -----
;
1A18 A000        WRCTL1: LDY      #0          ;MOVE CURSOR TO LEFT MARGIN
1A1A 8424        STY      CURSRX
1A1C A914        LDA      #20          ;START ON ROW 21 (OF 24).
1A1E 8525        STA      CURGRY
1A20 2022FC      JSR      CURSET      ;SET UP POINTERS (THANKS APPLE)

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1A23 B94C1A      WRTLP1: LDA    TXBUF1,Y
1A26 F009 ^1A31      BEQ      WRDN1      ;0 MARKS LAST CHARACTER
1A28 09C0        ORA      #$C0      ;APPLE-FY IT.
1A2A 20F0FD      JSR      COUT1
1A2D C8          INY
1A2E 4C231A      JMP      WRTLP1
1A31 60          WRDN1: RTS
;
1A32 A000        WRCTL2: LDY      #0
1A34 8424        STY      CURSRX
1A36 A916        LDA      #22      ;START ON ROW 23 (OF 24).
1A38 8525        STA      CURSRY
1A3A 2022FC      JSR      CURSET
1A3D B99C1A      WRTLP2: LDA    TXBUF2,Y
1A40 F009 ^1A4B      BEQ      WRDN2
1A42 09C0        ORA      #$C0
1A44 20F0FD      JSR      COUT1
1A47 C8          INY
1A48 4C3D1A      JMP      WRTLP2
1A4B 60          WRDN2: RTS
;
1A4C 282D585858 TXBUF1: DB      '(-XXX-YYY) (-XXX-YYY) BRSIZ XXX SSIZ XXX'
1A74 5649535541      DB      'VISUALIZE V LOCATE L STOP PAINT '
1A9B 00          DB      0
;
1A9C 515549434B TXBUF2: DB      'QUICKMODE Q KB-HOLD Z/X COLOR X BRS-UP U'
1AC4 5752415041      DB      'WRAPAROUND W REVERSE ,/. MAKE M PMODE'
1AEA 00          DB      0

```

ROUTINES TO DISPLAY COORDINATES/DISPLACEMENTS

```

;
;
;
;
1AEB AD471F      USEDSP: LDA    BUSEY
1AEE AE461F      LDX      BUSEX
1AF1 CD321F      CMP      LBUSY
1AF4 D005 ^1AFB      BNE      USEDSP      ;IT'S DIFFERENT, LET'S DISPLAY IT
1AF6 EC311F      CPX      LBUSX
1AF9 F016 ^1B11      BEQ      USEDEX
1AFB A280        USEDSP: LDX      #$80
1AFD 8EA31F      STX      NUMMSK
1B00 AD471F      LDA      BUSEY
1B03 AE461F      LDX      BUSEX
1B06 8D321F      STA      LBUSY
1B09 8E311F      STX      LBUSX
1B0C A001        LDY      #TXUSD
1B0E 20C91B      JSR      XYPRI
1B11 60          USEDEX: RTS
;
1B12 AD991F      BASDSP: LDA    SCSTRX
1B15 CD331F      CMP      LBASX
1B18 D018 ^1B32      BNE      BASDF
1B1A AD9A1F      LDA      SCSTRX+1
1B1D CD341F      CMP      LBASX+1
1B20 D010 ^1B32      BNE      BASDF
1B22 AD9B1F      LDA      SCSTRY

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1B25 CD351F      CMP      LBASY
1B28 D008 ^1B32  BNE      BASDF
1B2A AD9C1F      LDA      SCSTRY+1
1B2D CD361F      CMP      LBASY+1
1B30 F050 ^1B82  BEQ      BASDEX
1B32 AD821F      BASDF: LDA      TXTFLG
1B35 C901        CMP      #1
1B37 F049 ^1B82  BEQ      BASDEX      ;OOPS WE'RE NOT SUPPOSED TO WRITE TEXT.
1B39 A080        LDY      #$80
1B3B AE9A1F      LDX      SCSTRX+1
1B3E 8E341F      STX      LBASX+1
1B41 F007 ^1B4A  BEQ      BASXIN
1B43 ADA21F      LDA      OFFLAG      ;IF SOME POINTS ARE STILL ON SCREEN, THEN
1B46 D002 ^1B4A  BNE      BASXIN      ;DON'T DISPLAY X OR Y IN INVERSE.
1B48 A000        LDY      #$00
1B4A 8CA31F      BASXIN: STY      NUMMSK      ;STORE NORMAL/INVERT PRINT MASK
1B4D AD991F      LDA      SCSTRX
1B50 8D331F      STA      LBASX
1B53 A00C        LDY      #TXBSE
1B55 20F21B      JSR      PRSIGN      ;PRINT SIGN & TAKE ABS VALUE
1B58 201C1C      JSR      DCBYTE
1B5B A080        LDY      #$80
1B5D AE9C1F      LDX      SCSTRY+1
1B60 8E361F      STX      LBASY+1
1B63 D005 ^1B6A  BNE      BASYOT
1B65 AD9B1F      LDA      SCSTRY      ;CHECK HIGH BIT OF Y FOR > 127.
1B68 1007 ^1B71  BPL      BASYIN
1B6A ADA21F      BASYOT: LDA      OFFLAG
1B6D D002 ^1B71  BNE      BASYIN
1B6F A000        LDY      #$0      ;PRINT IT IN INVERSE.
1B71 8CA31F      BASYIN: STY      NUMMSK
1B74 AD9B1F      LDA      SCSTRY
1B77 8D351F      STA      LBASY
1B7A A010        LDY      #TXBSE+4
1B7C 20F21B      JSR      PRSIGN
1B7F 201C1C      JSR      DCBYTE
1B82 60          BASDEX: RTS
;
1B83 AC2E1F      SSZDF: LDY      SNMPTS
1B86 C8          INY
1B87 8C381F      STY      LSNMPT      ;FORCE LSNMPT TO BE DIFFERENT
1B8A AD2E1F      SSZDSP: LDA      SNMPTS
1B8D 38          SEC
1B8E ED921F      SBC      BSPTR
1B91 CD381F      CMP      LSNMPT
1B94 F00F ^1BA5  BEQ      SSZEXT
1B96 8D381F      STA      LSNMPT
1B99 A025        LDY      #TXSSZ
1B9B A280        LDX      #$80
1B9D 8EA31F      STX      NUMMSK
1BA0 A200        LDX      #$00
1BA2 201C1C      JSR      DCBYTE
1BA5 60          SSZEXT: RTS
;
1BA6 AC2B1F      TSZDF: LDY      NUMPTS

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1BA9 C8          INY
1BAA 8C371F      STY     LNUMPT
1BAD AD2B1F      TSZDSP: LDA     NUMPTS
1BB0 38          SEC
1BB1 ED911F      SBC     TBSPTR
1BB4 CD371F      CMP     LNUMPT
1BB7 F00F ^1BC8  BEQ     TSZEXT
1BB9 8D371F      STA     LNUMPT
1BBC A01C        LDY     #TXTSZ
1BBE A280        LDX     #$80
1BC0 8EA31F      STX     NUMMSK
1BC3 A200        LDX     #0
1BC5 201C1C      JSR     DCBYTE
1BC8 60          TSZEXT: RTS
;
1BC9 40          XYPRI: PHA
1BCA AD821F      LDA     TXTFLG
1BCD C901        CMP     #1          ;OK TO WRITE IN TEXT AREA?
1BCF F01E ^1BEF  BEQ     XYEXT      ;NOPE
1BD1 8A          TXA          ;Y=DISPLAY POSITION
1BD2 40          PHA          ;A=DELTA Y, X=DELTA X
1BD3 A200        LDX     #0          ;ASSUME POSITIVE 8 BIT #
1BD5 60          PLA
1BD6 1002 ^1BDA  BPL     #0+4        ;YES, IT'S POSITIVE
1BD8 A203        LDX     #3          ;NEGATIVE, ADD CORRESPONDING HIGH ORDER BITS
1BDA 20F21B      JSR     PRSIGN      ;DO THE X COORD
1BDD 201C1C      JSR     DCBYTE
1BE0 C8          INY
1BE1 A200        LDX     #0          ;ASSUME POSITIVE 8 BIT #
1BE3 60          PLA
1BE4 1002 ^1BE8  BPL     #0+4        ;YES, IT'S POSITIVE
1BE6 A203        LDX     #3          ;NEGATIVE, ADD CORRESPONDING HIGH ORDER BITS
1BE8 20F21B      JSR     PRSIGN      ;DO THE Y COORD
1BEB 201C1C      JSR     DCBYTE
1BEE 60          DONXYP: RTS
1BEF 60          XYEXT: PLA
1BF0 60          RTS
;
1BF1 AD          DB     $AD ;==FLAK
;
;
;
1BF2 40          PRSIGN: PHA          ;PRSIGN EVALUATES 10 BIT SIGNED INTEGER.
1BF3 8A          TXA          ;PRINTS '+' OR '-', DEPENDING ON SIGN.
1BF4 2902        AND     #2          ;RETURNS WITH 10 BIT ABSOLUTE VALUE.
1BF6 D00A ^1C02  BNE     NEGNUM      ;HIGH ORDER IN X, LOW ORDER IN A.
1BF8 A92B        LDA     #$2B        ;AN INVERSE '+'
1BFA 0DA31F      ORA     NUMMSK      ;OR IN NORMAL/INVERSE MASK
1BFD 9164        STA     [CPAGE1],Y ;DISPLAY IT
1BFF C8          INY
1C00 60          PLA
1C01 60          RTS
1C02 A92D        NEGNUM: LDA     #$2D ;AN INVERSE '-'
1C04 0DA31F      ORA     NUMMSK
1C07 9164        STA     [CPAGE1],Y

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```

1C09 C8          INV
1C0A 68          PLA          ;NOW TO NEGATE THE 10 BIT.
1C0B 49FF        EOR          ;COMPLEMENT
1C0D 18          CLC
1C0E 6901        ADC          #1          ;AND INCREMENT (ALA PDP-8)
1C10 48          PHA
1C11 8A          TXA          ;GET HIGH ORDER
1C12 49FF        EOR          ;THE SAME ORDEAL
1C14 6900        ADC          #0          ;DON'T ADD ONE, IT WOULD BE IN THE CARRY.
1C16 2903        AND          #3
1C18 AA          TAX          ;PUT HIGH ORDER BACK
1C19 68          PLA          ;GET LOW ORDER
1C1A 60          RTS

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1C1B AD          DB          $AD ;==FLAK

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DCBYTE - PRINT 10 BIT HEX # IN DECIMAL - PLUS #'S ONLY

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1C1C 48          DCBYTE: PHA          ;FIRST LET'S FIGURE OUT IF WE'RE
1C1D AD821F      LDA          TXTFL6  ;SUPPOSED TO BE WRITING IN TEXT AREA.
1C20 C901        CMP          #1      ;OK TO WRITE IN TOP LINE?
1C22 F048 ^1C6C  BEQ          DCNDIG  ;NOPE
1C24 A930        LDA          #$30
1C26 0DA31F      ORA          NUMMSK   ;FOR INVERSE/NORMAL '0' THRU '9'
1C29 8D3D1F      STA          TMPNUM   ;WE'LL INCREMENT THIS
1C2C 8D7E1F      STA          TEMP
1C2F 68          PLA
1C30 38          DCSUB1: SEC          ;JUST IN CASE WE NEED SEC
1C31 E964        SBC          #100
1C33 B003 ^1C38  BCS          DCNCC1   ;CARRY STILL SET, NO BORROW.
1C35 CA          DEX          ;DECRMENT HIGH ORDER
1C36 3006 ^1C3E  BMI          DCOUT1   ;GONE BELOW 0?
1C38 EE3D1F      DCNCC1: INC          TMPNUM
1C3B 4C301C      JMP          DCSUB1   ;GO SUB ANOTHER 100
1C3E 48          DCOUT1: PHA
1C3F AD3D1F      LDA          TMPNUM
1C42 9164        STA          [CPAGE1],Y ;DISPLAY IT
1C44 C8          INY
1C45 68          PLA
1C46 6964        ADC          #100
1C48 AE7E1F      LDX          TEMP     ;ANOTHER '0' - FOR THE TENS
1C4B 38          DCSUB2: SEC
1C4C E90A        SBC          #10
1C4E 9004 ^1C54  BCC          DCOUT2
1C50 E8          INX
1C51 4C4B1C      JMP          DCSUB2
1C54 48          DCOUT2: PHA
1C55 8A          TXA
1C56 9164        STA          [CPAGE1],Y
1C58 C8          INY
1C59 68          PLA
1C5A 690A        ADC          #10
1C5C AE7E1F      LDX          TEMP

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1C5F 38          DCSUB3: SEC
1C60 E901        SBC      #1
1C62 9004 ^1C68  BCC      DCOUT3
1C64 E8          INX
1C65 4C5F1C      JMP      DCSUB3
1C68 8A          DCOUT3: TXA
1C69 9164        STA      [CPAGE1],Y
1C6B 60          RTS
1C6C 68          DCNDIG: PLA
1C6D 60          RTS
;
;
;
;
;
;
;
;
;
;
1C6E AD301F      LSTERA: LDA      ERSFLG      ;DON'T ERASE IF ERASE FLAG NOT ON.
1C71 1045 ^1CB8  BPL      DONER0
1C73 AD2C1F      LDA      LNMPTS      ;GET LAST # POINTS PLOTTED.
1C76 F036 ^1CAE  BEQ      DONERX      ;DON'T DO IT IF THERE'S NOTHING TO ERASE
1C78 8D3D1F      STA      TMPNUM
1C7B AE391F      LDX      LASTSX      ;GET LAST (X,Y) PLOTTED AT. WE'LL
1C7E AD3A1F      LDA      LASTSY      ;WORK BACKWARD FROM THERE.
1C81 48          PHA
1C82 AC3D1F      ELOOP: LDY      TMPNUM
1C85 B90065      LDA      LSTBYT,Y      ;GET BYTE THAT CONTAINED PIXEL THAT WAS THERE
1C88 8D7E1F      STA      TEMP
1C8B 68          PLA
1C8C A8          TAY
1C8D 48          PHA
1C8E 209E1D      JSR      HPOS      ;GET ADDRESS OF WHERE BYTE WAS IN MEMORY.
1C91 AD7E1F      LDA      TEMP
1C94 9160        STA      [FROM],Y      ;PUT'ER BACK
1C96 CE3D1F      DEC      TMPNUM
1C99 AC3D1F      LDY      TMPNUM
1C9C F00F ^1CAD  BEQ      DONERA      ;WE'RE DONE
1C9E 68          PLA      ;RESTORE Y
1C9F 38          SEC
1CA0 F172        SBC      [CBASEY],Y      ;GET TO PREVIOUS Y.
1CA2 297F        AND      #$7F      ;TAKE CARE OF WRAPAROUND
1CA4 48          PHA
1CA5 8A          TXA      ;NOW DO SAME FOR X.
1CA6 38          SEC
1CA7 F170        SBC      [CBASEX],Y
1CA9 AA          TAX
1CAA 4C821C      JMP      ELOOP
1CAD 68          DONERA: PLA
1CAE A900        DONERX: LDA      #$0
1CB0 8D301F      STA      ERSFLG      ;TURN OFF ERASE FLAG, WE DID IT.
1CB3 A901        LDA      #1      ;IF WE ACTUALLY ERASED, THEN SET CHANGE
1CB5 8D7F1F      STA      CHGFLG      ;ON SO THAT PATTERN WILL BE REDRAWN.
1CB8 60          DONER0: RTS
;
;
; WRAPAT - PATCH THE DRAW ROUTINE SO IT TAKES CARE
; WRAPAROUND LIKE WE'VE BEEN DIRECTED.

```

```

;
;
1CB9 AD981F WRAPAT: LDA WRPIND ;WHAT'S THE FLAG SAY?
1CBC 3006 ^1CC4 BMI WARPOF ;IT SEZ NO WRAPAROUND!!
1CBE A938 LDA #INSSEC ;SET PATCH LOC TO SEC
1CC0 8D031D STA DRWPAT
1CC3 60 RTS
1CC4 A918 WARPOF: LDA #INSCLC ;SET PATCH LOC TO CLC
1CC6 8D031D STA DRWPAT
1CC9 60 RTS

;
= 0038 INSSEC: EQU $38
= 0018 INSCLC: EQU $18
;
; DRAWIT - DRAW THE CURRENT PATTERN
;
;
1CCA AD2F1F DRAWIT: LDA CURPTS ;SKIP OUT IF THERE'S NO PATTERN TO DRAW
1CCD D003 ^1CD2 BNE HAVSUM
1CCF 4C631D JMP DONDRW
1CD2 A901 HAVSUM: LDA #1
1CD4 8D3D1F STA TMPNUM ;INIT POINT COUNTER
1CD7 A900 LDA #0 ;CLEAR COUNT OF POINTS PLOTTED ON SCREEN
1CD9 8DA11F STA PTCNT
1CDC AE991F LDY SCSTRX ;WE'LL USE THE 10 BIT SCREEN LOCATION
1CDF 8E9D1F STX SDSTRX ;WHILE DRAWING, SO WE CAN TELL WHEN WE HAVE
1CE2 AE9A1F LDY SCSTRX+1 ;WRAPPED AROUND.
1CE5 8E9E1F STX SDSTRX+1
1CE8 AC9B1F LDY SCSTRY
1CEB 8C9F1F STY SDSTRY
1CEE AC9C1F LDY SCSTRY+1
1CF1 8CA01F STY SDSTRY+1
1CF4 AD9F1F DLOOP: LDA SDSTRY
1CF7 297F AND #$7F ;KEEP Y < 127 WHEN LOOKING IN TABLE
1CF9 A8 TAY
1CFA AE9D1F LDY SDSTRX
1CFD 209E1D JSR HPOS ;FIND WHERE PIXEL RESIDES IN MEMORY
1D00 B160 LDA [FROM],Y ;GET BYTE THAT'S THERE RIGHT NOW
1D02 48 PHA ;AND HOLD ON TO IT.
1D03 18 DRWPAT: CLC ;THIS LOCATION GETS PATCHED TO A SEC/CLC BY
; ;THE WRAPAT ROUTINE. WHEN WRAPAROUND IS ON,
; ;WE DON'T BOTHER CHECKING.
;
1D04 B015 ^1D1B BCS DRWDO
1D06 ADA01F LDA SDSTRY+1 ;SEE IF ANY HIGH ORDER BITS ARE ON
1D09 0D9E1F ORA SDSTRX+1
1D0C D005 ^1D13 BNE DRWDO ;IF SO, WE'RE OFF THE SCREEN.
1D0E AD9F1F LDA SDSTRY ;SEE IF Y > 127
1D11 1008 ^1D1B BPL DRWDO ;<=127
1D13 ADA21F DRWDO: LDA OFFLAG ;SYSTEM WRAP FLAG ON?
1D16 D009 ^1D21 BNE DRWNPL ;NO - ONLY PLOT POINTS THAT ARE ON SCREEN.
1D18 4C1E1D JMP DRWDO+3 ;YES - PLOT ALL POINTS, BUT ONLY COUNT THOSE ON
1D1B EEA11F DRWDO: INC PTCNT ;INCR # POINTS WITHIN SCREEN BOUNDS.
1D1E 20AC1D JSR HPLT ;OK, PLOT THE PIXEL.
1D21 AC3D1F DRWNPL: LDY TMPNUM ;GET COUNTER/POINTER
1D24 68 PLA ;GET OUR PREVIOUS BYTE BACK

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1D25 990065      STA      LSTBYT,Y      ;AND STORE IT IN ERASE ARRAY.
1D28 CC2F1F      CPY      CURPTS      ;ARE WE DONE?
1D2B F036 ^1D63  BEQ      DONDRAW      ;YUP
1D2D 18          CLC
1D2E A200        LDX      #0            ;DO A 10 BIT ADD FOR X & Y HERE.
1D30 B172        LDA      [CBASEY],Y
1D32 1002 ^1D36  BPL      DRWNM1      ;IT'S NOT A NEG VECTOR
1D34 A203        LDX      #3            ;GET HIGH ORDER BITS FOR NEG VECTOR
1D36 6D9F1F      DRWNM1: ADC      SDSTRY ;ADD TO OUR CURRENT LOCATION, LOW ORDER
1D39 8D9F1F      STA      SDSTRY
1D3C 8A          TXA                    ;NOW TO ADD THE HIGH ORDER STUFF.
1D3D 6DA01F      ADC      SDSTRY+1
1D40 2903        AND      #3            ;KEEPTO +/- 511
1D42 8DA01F      STA      SDSTRY+1
1D45 A200        LDX      #0
1D47 18          CLC
1D48 B170        LDA      [CBASEX],Y
1D4A 1002 ^1D4E  BPL      DRWNM2      ;IT'S NOT A NEG VECTOR
1D4C A203        LDX      #3            ;GET HIGH ORDER BITS FOR NEG VECTOR
1D4E 6D9D1F      DRWNM2: ADC      SDSTRX ;ADD TO OUR CURRENT LOCATION, LOW ORDER
1D51 8D9D1F      STA      SDSTRX
1D54 8A          TXA                    ;NOW TO ADD THE HIGH ORDER STUFF.
1D55 6D9E1F      ADC      SDSTRX+1
1D58 2903        AND      #3            ;KEEPTO +/- 511
1D5A 8D9E1F      STA      SDSTRX+1
1D5D EE3D1F      INC      TMPNUM
1D60 4CF41C      JMP      DLOOP        ;TIME FOR ANOTHE
1D63 AD9D1F      DONDRAW: LDA      SDSTRX
1D66 8D391F      STA      LASTSX      ;REMEMBER LAST (X,Y) PLOTTED SO WE CAN
1D69 AD9F1F      LDA      SDSTRY      ;WORK BACKWARDS FOR ERASURE.
1D6C 297F        AND      #$7F
1D6E 8D3A1F      STA      LASTSY
1D71 A980        LDA      #$80        ;TURN THERE'S SOMETHING THAT YOU MIGHT WANT TO
1D73 8D301F      STA      ERSFLG      ;ERASE FLAG ON...
1D76 AD2F1F      LDA      CURPTS
1D79 8D2C1F      STA      LNMPTS      ;AND REMEMBER HOW MAHY PTS WE DID.
1D7C 60          RTS

;
1D7D AD          DB      $AD ;==FLAK
;
;
;      HBKGND - DRAW HIRES BACKGROUND
;      -----
;
1D7E A920        HBKGND: LDA      #$20      ;WE'RE GONNA FILL DA PAGE
1D80 8561        STA      FROM+1
1D82 A000        LDY      #0
1D84 8460        STY      FROM
1D86 AD411F      BKLOOP: LDA      HCOLOR
1D89 9160        STA      [FROM],Y
1D8B C8          INY
1D8C AD421F      LDA      HCOLR2      ;GET SHIFTED VERSION OF COLOR BYTE
1D8F 9160        STA      [FROM],Y
1D91 C8          INY
1D92 D0F2 ^1D86  BNE      BKLOOP

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1D94 E661      INC      FROM+1
1D96 A561      LDA      FROM+1
1D98 291F      AND      #$1F
1D9A D0EA ^1D86 BNE      BKLOOP
1D9C 60        RTS

;
1D9D AD        DB      $AD ;==FLAK
;
;
; HPLOT - DIGITAL MERCURY'S TABLE DRIVEN HIRES PLOT ROUTINE.
; MUCHO WASTO CORE, BUT IT'S FAST !!
; ON ENTRY, Y HOLDS Y VALUE, Y<128. X HOLDS X, X<256.
; HPOS EXITS WITH ADDRESS OF BYTE CONTAINING THE PIXEL
; IN FROM & Y. HPLOT ORS THE PIXEL INTO THE BYTE.
;
1D9E B90060    HPOS:  LDA    YTAB1,Y      ;GET HIGH ORDER BYTE OF ROW ADDR
1DA1 8561      STA    FROM+1
1DA3 B98060    LDA    YTAB2,Y      ;GET LOW ORDER BYTE
1DA6 8560      STA    FROM
1DAB BC0061    LDY    XTAB1,X      ;GET OFFSET ON THIS ROW
1DAB 60        RTS

;
;
1DAC 98        HPLOT: TYA              ;IF ON ODD BYTE, THEN USE SHIFTED VERSION
1DAD 4A        LSR    A              ;OF THE COLOR BYTE.
1DAE AD411F    LDA    HCOLOR
1DB1 9003 ^1D86 BCC    NOSHFT
1DB3 AD421F    LDA    HCOLR2
1DB6 4CB91D    NOSHFT: JMP    PAINT1      ;THE JUMP LOCATION HERE GETS PATCHED
      = 1DB7    PNTJMP: EQU *0-2
;
1DB9 5160      PAINT1: EOR    [FROM],Y    ;NORMAL PAINT MODE
1DBB 3D0062    AND     XTAB2,X      ;ISOLATE BIT FOR OUR PIXEL
1DBE 5160      EOR    [FROM],Y
1DC0 9160      STA    [FROM],Y
1DC2 60        RTS

;
1DC3 3160      PAINT2: AND     [FROM],Y    ;NO CHANGE
1DC5 3D0062    AND     XTAB2,X      ;ISOLATE BIT FOR OUR PIXEL
1DC8 1160      ORA     [FROM],Y
1DCA 9160      STA    [FROM],Y
1DCC 60        RTS

;
1DCD 48        PAINT3: PHA              ;BLACK ==> COLORS, COLORS ==> WHITE
1DCE 2980      AND     #$80          ;SAVE COLOR FAMILY
1DD0 8D7E1F    STA    TEMP
1DD3 68        PLA
1DD4 1160      ORA     [FROM],Y
1DD6 297F      AND     #$7F
1DD8 0D7E1F    ORA     TEMP          ;OR IN OUR COLOR FAMILY BIT
1DDB 4CB91D    JMP    PAINT1

;
1DDE 48        PAINT4: PHA              ;WHITE ==> COLORS, COLORS ==> BLACK
1DDF 2980      AND     #$80
1DE1 8D7E1F    STA    TEMP

```



```

1DE4 68          PLA
1DE5 3160        AND    [FROM],Y
1DE7 297F        AND    #$7F
1DE9 0D7E1F      ORA    TEMP
1DEC 4CB91D      JMP    PAINT1

;
1DEF B160        PAINT5: LDA    [FROM],Y      ;COMPLEMENT WHATEVER'S THERE, IGNORE
;                                          ;CURRENT COLOR SETTING.
1DF1 497F        EOR    #$7F      ;RETAIN COLOR FAMILY
1DF3 4CB91D      JMP    PAINT1

;
; HGHCLR - CLEAR HIGH ORDER BITS OF SCREEN LOCATION
; USED TO GET BRUSH BACK ON SCREEN.
; -----
;
1DF6 A900        HGHCLR: LDA    #0
1DF8 8D9A1F      STA    SCSTRX+1
1DFB 8D9C1F      STA    SCSTRY+1
1DFE AD9B1F      LDA    SCSTRY
1E01 297F        AND    #$7F
1E03 8D9B1F      STA    SCSTRY
1E06 60          RTS

```

```

;
; =====
; PROGRAM REGISTERS
; =====
1E07 = 1F00      ORG      $FF00 AND (*0+$100)
1F00 00      REMOTE: DB      $00      ;COUNTER FOR 'REMOTE' CONTROL
1F01 00      REMTMP: DB      $00      ;HOLDS VALUE OF REMOTE DURING EXECUTION
;                                     ;ALSO USED BY PROGRAM WHEN RETURN KEY IS HIT.
;                                     ;CH50 WILL RETURN WHEN CTR IS EXHAUSTED
1F02 00      RCTR1:  DB      $00
1F03 00      RCTR2:  DB      $00
1F04 00      RCTR3:  DB      $00
1F05 00      TCTR1:  DB      $00      ;THE TCTR SERIES ARE USED TO COUNT THE
1F06 00      TCTR2:  DB      $00      ;NUMBER OF TICKS SINCE THEY WERE LAST
1F07 00      TCTR3:  DB      $00      ;CLEARED.
1F08 2A      COLORS: DB $2A ;GREEN
1F09 55      DB $55 ;VIOLET
1F0A 7F      DB $7F ;WHITE
1F0B AA      DB $AA ;ORANGE
1F0C D5      DB $D5 ;BLUE
1F0D 80      DB $80 ;BLACK II
1F0E FF      DB $FF ;WHITE II
1F0F 00      DB      $00      ;BLACK
1F10 = 0008    ACLOOK: DS      8      ;ASCII LOOKUP TABLE FOR CUSTOMIZED COLORS.
1F18 = 0008    DCLOOK: DS      8      ;HEX LOOKUP TABLE FOR CUSTOMIZED COLRS.
1F20 80      SPEEDS: DB      $80      ;THE DELAY COUNT FOR EACH OF THE 8 SPEEDS
1F21 40      DB      $40
1F22 20      DB      $20
1F23 10      DB      $10
1F24 08      DB      $08
1F25 04      DB      $04
1F26 02      DB      $02
1F27 01      DB      $01
1F28 00      SAVEX  DB $00 ;TEMP X
1F29 00      SAVEY  DB $00 ;TEMP Y
1F2A 00      MAXPTS: DB      $00      ;MAX # PTS TO DISPLAY/ENTER
1F2B 00      NUMPTS: DB      $00      ;# OF PTS TO ENTER/DISPLAY
1F2C FF      LNMPTS: DB      $FF      ;# OF PTS OF TARGET DRAWN LAST TIME
1F2D 00      SMXPTS: DB      $00      ;MAX # PTS OF STROKE TO ENTER/DISPLAY
1F2E 00      SNMPTS: DB      $00      ;# OF PTS OF STROKE TO CONSIDER
1F2F 00      CURPTS: DB      $00      ;CURRENT # OF PTS TO DISPLAY
1F30 00      ERSLG: DB      $00      ;ERASE FLAG: WHEN NEG, MEANS ERASE LAST PATTERN
;                                     ;DRAWN WITH WHAT WAS THERE, B4 PROCEEDING ANEW.
1F31 00      LBUSX:  DB      $00      ;LAST DISPLAYED BUSEX, BUSEY
1F32 00      LBUSY:  DB      $00
1F33 0000     LBASX:  DW      $00      ;LAST DISPLAYED CSTRTX, CSTRTY
1F35 0000     LBASY:  DW      $00
1F37 00      LNUMPT: DB      $00      ;LAST DISPLAYED NUMPTS
1F38 00      LSNMPT: DB      $00      ;LAST DISPLAYED SNMPTS
1F39 00      LASTSX: DB      $00      ;LAST X STARTING POSITION USED BY MNITOR ROUTINE
1F3A 00      LASTSY: DB      $00      ;LAST Y ....
1F3B 00      TEMPX:  DB      $00
1F3C 00      TEMPY:  DB      $00      ;X & Y FOR TEMPORARY SUBROUTINE USE (LSTERA)
1F3D 00      TMPNUM: DB $00 ;TEMP INDEX
1F3E 00      XCHAR1: DB      $00      ;XCHAR1 & XCHAR2 ARE USED TO HOLD ASCII
1F3F 00      XCHAR2: DB      $00      ;FOR EXTERNAL CALLS.

```

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1F40 00      CHR HIT: DB      $00      ;HOLDS CHAR HIT FOR CALLER'S BENEFIT
1F41 00      HCOLOR DB $00 ;CURRNT COLOR
1F42 00      HCOLR2: DB      $00      ;CURRENT COLOR ROTATED FOR ODD BYTES
1F43 00      PAGE: DB $00 ;CURRENT GRAPICS PAGE IN USE
1F44 00      USEX DB $00 ;X DISP BEING USED
1F45 00      USEY DB $00 ;Y DISP BEING USED
1F46 00      BUSEX: DB      $00      ;VECTOR TO BE APPLIED TO BRUSH IF NOT IN
1F47 00      BUSEY: DB      $00      ;IN LOCATE MODE.
1F48 = 0004   PADFUL: DS      4      ;1-255 RANGE FOR PDLs 1-4.
1F4C = 0004   PAD18: DS      4      ;1-8 RANGE FOR PDLs 1-4.
1F50 = 0004   PADVEC: DS      4      ;-4 TO +4 RANGE FOR PDLs 1-4.
1F54 00      CUMODE DB $00 ;CURRENT MODE (LIKE P REGISTER)
;
; -1 = MONITOR, 0 = MASTER
1F55 00      HLDMODE: DB      $00      ;HOLD CURRENT MODE
1F56 01      MXMODE: DB      $1      ;0 = GRAPHICS ONLY (FOR MOVIES) 1 = TEXT & GR
1F57 00      TPTR DB $00 ;PTR TO A DISP OF CURRENT TARGET
1F58 00      SPTR DB $00 ;PTR TO A DISP OF CURRENT SOURCE
1F59 00      CURTRG: DB      $00      ;CURRENT TARGET (INTERNAL)
;1-8 = PATTERN 1-8
1F5A 00      CTARG: DB      $00      ;CURRENT TARGET (DISPLAY)
;'1' - '8'
1F5B 00      CURSRC: DB      $00      ;CURRENT SOURCE (INTERNAL)
;0 = PDLs 1 & 2, 1-8 = PATTERN 1-8.
1F5C 00      CSOURC: DB      $00      ;CURRENT SOURCE (DISPLAY)
;'P', '1' - '8'
1F5D 7F      CSTRTX DB $7F ;CURRENT STARTING X
1F5E 3F      CSTRTY DB $3F ;CURRENT STARTING Y
1F5F 00      CCOUNT: DB      $00      ;A DUMMY LOCATION THAT IS INCREMENTED AND
;AND-ED OFF TO GET WHICH OF PADDLES (0-3) TO SA
1F60 00      CURCNT: DB $00 ;REFRESH FOR COUNTER
1F61 00      HCOUNT: DB $00 ;CURRENT COUNTER FOR TIMING (= SPEED)
1F62 00      CSPEED: DB      $00      ;CURRENT SPEED (DISPLAY)
;'S' = SINGLE STEP, '1' - '8'
1F63 00      SAMFLG: DB      $00      ;STROKE SIZING MODE (INTERNAL)
;-1 = NORMAL, 1-4 = PDL 1-4.
1F64 00      DSSFLG: DB      $00      ;STROKE SIZING MODE (DISPLAY)
;'N', '1' - '4'
1F65 00      TAMFLG: DB      $00      ;BRUSH SIZING MODE (INTERNAL)
;-1 = NORMAL, 1-4 = PDL 1-4.
1F66 00      DSTFLG: DB      $00      ;BRUSH SIZING MODE (DISPLAY)
;'N', '1' - '4'
1F67 00      FRZFLG DB $00 ;FREEZE FLAG
1F68 00      DRWFLG DB $00 ;DRAW ENABLE
1F69 00      MEFLAG DB $00 ;MOVE OR ENTER MODE FLAG
1F6A 01      INIFLG: DB      $01      ;INIT FLAG (0=INITIALIZED)
1F6B 00      LOCFLG: DB      $00      ;LOCATE MODE FLAG (INTERNAL & DISPLAY)
1F6C 00      CURLOC: DB      $00      ;LOCATION DEVICE (INTERNAL ONLY)
;-1 = KB, 0 = PADDLES 1 & 2
1F6D 00      VISFLG: DB      $00      ;VISUALIZE MODE FLAG (INTERNAL & DISPLAY)
1F6E 00      PNTFLG: DB      $00      ;PAINT MODE FLAG (INTERNAL & DISPLAY)
1F6F 00      BRNFLG: DB      $00      ;BRUSH MODE FLAG (INTERNAL & DISPLAY)
1F70 00      QSTFLG: DB      $00      ;QUICK STROKE MODE (INTERNAL & DISPLAY)
1F71 00      WRPFLG: DB      $00      ;WRAP-AROUND ON/OFF (INTERNAL & DISPLAY)
1F72 00      XNEG: DB      $00      ;NEGATE SOURCE X VECTOR FLAG
1F73 00      YNEG: DB      $00

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1F74 00      XCRUISE DB $00 ;LOCK CURRENT X FLAG
1F75 00      YCRUISE DB $00 ;LOCK CURRENT Y FLAG
1F76 00      COLFLG: DB      $00 ;COLOR SELECTION MODE (INTERNAL)
                                ;0 = KB, 1-4 = PDL 1-4
1F77 00      DSCFLG: DB      $00 ;COLOR SELECTION MODE (DISPLAY)
                                ;'K', '1' - '4'
1F78 00      CCOLOR: DB      $00 ;CURRENT COLOR BEING DRAWN WITH (INTERNAL).
1F79 00      CLRHL: DB      $00 ;TEMP STORAGE FOR CURRENT COLOR (1-8)
1F7A 00      BCOLOR: DB      $00 ;CURRENT COLOR SETTING (INTERNAL)
1F7B 00      DSCOLR: DB      $00 ;CURRENT COLOR SETTING (DISPLAY)
1F7C 00      BKCOLR: DB      $00 ;BACKGROUND COLOR (1-8)
1F7D 00      DSBKND: DB      $00 ;BACKGROUND COLOR (DISPLAY)
1F7E 00      TEMP: DB      $00 ;TEMP STORAGE
1F7F 00      CHGFLG: DB      $00 ;FLAG USED TO INDICATE IF ANY CHANGE WAS
                                ;INSTITUTED SINCE LAST TIME SOMETHING WAS
                                ;DISPLAYED THAT WOULD GIVE US REASON TO
                                ;ERASE THIS LAST THING AND REDISPLAY.
                                ;0 = NO CHANGE, 1 = CHANGE.
1F80 00      HITTP: DB      $00 ;HIT TYPE: (1 = KB, 0 = EXTERNAL)
1F81 00      HITFLG: DB      $00 ;0 RESPOND NORMALLY TO KB HITS
                                ;1 RETURN TO CALLER W/CHARACTER IN TMPNUM
                                ;-1 IGNORE ALL KB HITS
1F82 00      TXNFLG: DB      $00 ;0 USE TEXT AREA FOR HELP SCREEN &CONTROLS
                                ;1 DO NOT WRITE IN TEXT AREA
                                ;-1 WRITE IN ONLY 1ST TWO LINES OF CTL DISPLAY
1F83 00      CTXFLG: DB      $00 ;TRACKS STATUS OF 4 LINE CTL DISPLAY
                                ;0 ALL 4 LINES ARE OK
                                ;1 NONE OF THE 4 LINES ARE OK
                                ;-1 TOP 2 OF 4 LINES ARE OK
1F84 00      KBFRCH: DB      $00 ;1 - TURN FREEZE ON AFTER ONE CYCLE FLAG
1F85 00      GSTXEQ: DB      $00 ;1 - EXECUTING QUICK STROKE; 0 - NOTHING
1F86 00      STKFLG: DB      $00 ;1 - UPDATE STROKE BUFFER W/CURRENT VECTOR
1F87 00      OPTR: DB      $00 ;POINTER TO SOURCE PATTERN
1F88 00      ONMPTS: DB      $00 ;# OF POINTS IN SOURCE PATTERN (INHERENT SIZE)
1F89 00      ORGFLG: DB      $00 ;1 - TELLS LOOP ROUTINES THAT USER WANTS TO
                                ;RETURN TO ENTER OR MOVE ORIGIN.
1F8A 00      ORIGX: DB      $00 ;THE VECTOR THAT WILL GET US BACK TO THE ORIGIN
1F8B 00      ORIGY: DB      $00
1F8C 7F      PORGX: DB      127 ;THE LAST SCREEN LOCATION ORIGIN
1F8D 40      PORGY: DB      64
1F8E 00      EORGX: DB      $00 ;THE VECTOR THAT WILL GET US BACK TO THE
1F8F 00      EORGY: DB      $00 ;ORIGIN IN THE PATTERN BEING ENTERED.
1F90 00      SPDHL: DB      $00 ;HOLD SPEED SETTING WHILE EXECUTING QUICK STROK
1F91 00      TBSPTR: DB      $00 ;BASE POINTER TO LEFT SIDE OF TARGET.
1F92 00      BSPTTR: DB      $00 ;BASE POINTER TO LEFT SIDE OF STROKE BUFFER.
1F93 00      PNMFLG: DB      $00 ;PAINT MODE
1F94 00      PNMIND: DB      $00 ;THE ACTUAL PAINTING MODE
1F95 00      LOCHLD: DB      $00 ;REMEMBER LOCATE MODE STATUS
1F96 00      VISHLD: DB      $00 ;REMEMBER VISUALIZE MODE STATUS
1F97 00      WRPHLD: DB      $00 ;REMEMBER WRAPAROUND STATUS
1F98 00      WRPIND: DB      $00 ;WRAPAROUND FLAG (- = OFF, + = ON)
1F99 0000     SCSTRX: DW      $00 ;SCREEN LOCATION: 10 BITS
1F9B 0000     SCSTRY: DW      $00
1F9D 0000     SDSTRX: DW      $00 ;SCREEN LOCATION FOR DRAWIT ROUTINE
1F9F 0000     SDSTRY: DW      $00

```

```

1FA1 00      PTCNT: DB      $00      ;COUNT OF POINTS WITHIN SCREEN BOUNDS
1FA2 00      OFFLAG: DB     $00      ;OFF SCREEN FLAG.
                                           ;0 = WE'RE OFF THE SCREEN, PLOT ALL POINTS BUT
                                           ;  COUNT ONLY THOSE WITHIN SCREEN BOUNDS.
                                           ;1 = ON (OR JUST OFF) SCREEN, PLOT ONLY THOSE
                                           ;  POINTS WITHIN SCREEN BOUNDS.

1FA3 00      NUMMSK: DB     $00      ;USED TO OR IN INVERSE VIDEO BIT FOR
                                           ;SCREEN LOCATION DISPLAY.

1FA4 00      LOCX:  DB      $00      ;HOLD REGISTERS FOR PREVIOUS LOCATE VECTOR
1FA5 00      LOCY:  DB      $00
1FA6 00      DRWHLD: DB     $00      ;HOLD BRUSH UP/DOWN STATUS.
                                           ;
                                           ;
      = 6600  PATTS: EQU      $6600
1FA7 0066    APATTS: DW      PATTS
1FA9 0068          DW      PATTS+$200
1FAB 006A          DW      PATTS+$400
1FAD 006C          DW      PATTS+$600
1FAF 006E          DW      PATTS+$800
1FB1 0070          DW      PATTS+$A00
1FB3 0072          DW      PATTS+$C00
1FB5 0074          DW      PATTS+$E00
1FB7 0076          DW      PATTS+$1000
                                           ;
      = 7800  EXTTBL: EQU    PATTS+$1200 ;BEGINNING OF TABLE TO SUPPORT
                                           ;MULTIPLE KB HIT CALLS FROM OUTSIDE
                                           ;
                                           ;
1FB9 = 6000    ORG      $6000
      = 6000    YTAB1: EQU   *0
6000 = 6080    ORG      *0+128
                                           ;
                                           ;  YTAB1 - CONTAINS HIGH ORDER BYTE OF ROW ADDRESS FOR Y VALUES 0-127.
                                           ;  TABLE IS OFFSET BY 16 FOR THE CH50 'FRAME' EFFECT. CHEAP.
                                           ;
                                           ;
                                           ;  THE FOLLOWING EXPRESSION IS BASICALLY REPEATED 128 TIMES
                                           ;
      YCOOR: SET 16 + 127 - (*0-YTAB1)
      YF8:   SET YCOOR AND $F8
      DB HIGH($2000+(YF8/64)*$28+(YF8)*$10-(YF8/64)*1024+(YCOOR AND $07)*$
                                           ;
                                           ;
      = 6080    YTAB2: EQU   *0
6080 = 6100    ORG      *0+128
                                           ;
                                           ;  YTAB2 - CONTAINS LOW ORDER BYTE OF ROW ADDRESS FOR Y VALUES 0-127.
                                           ;
                                           ;
                                           ;  THE FOLLOWING EXPRESSION IS BASICALLY REPEATED 128 TIMES
                                           ;
      YCOOR: SET 16 + 127 - (*0-YTAB2)
      YF8:   SET YCOOR AND $F8
      DB LOW((YF8/64)*$28+(YF8)*$10-(YF8/64)*1024+(YCOOR AND $07)*$400)
                                           ;
                                           ;

```

```

;-----
;
;
= 6100      XTAB1: EQU *0
6100 = 6200      ORG *0+256
;
;
;   XTAB1 - CONTAINS OFFSET TO SCREEN BYTE ON CURRENT ROW FOR X VALUES
;           0-255. IT IS OFFSET BY DECIMAL 11 FOR SCREEN EFFECT.
;
;
;   THE FOLLOWING EXPRESSION IS REPEATED 256 TIMES
;
;   DB ( *0 - XTAB1 + 11)/7
;
;-----
;
;
= 6200      XTAB2: EQU *0
6200 = 6300      ORG *0+256
;
;
;   XTAB2 - CONTAINS APPROPRIATE BIT MASK FOR X VALUES 0-255. ALL BYTES HAVE
;           THE COLOR FAMILY BIT SET SO THAT THE AFFECTED BYTE IN CORE WILL
;           HAVE ITS COLOR FAMILY CHANGED IF ONE OF ITS BITS IS CHANGED.
;
;
;   THE FOLLOWING EXPRESSION IS REPEATED 256 TIMES
;
;   DB $80 + 1 SHL ( ( *0 - XTAB2 + 11 ) MOD 7 )
;
;-----
;
;
6300 = 6300      ORG $FF00 AND (*0+$FF)
;
;
= 6300      JMPTBL: EQU    *0
;
6300 570F      DW NONFUN
6302 570F      DW NONFUN
6304 570F      DW NONFUN
6306 6F14      DW      CTRLC    ;CTRL-C ==> FUNCTIONS LIKE RETURN
6308 570F      DW NONFUN
630A 570F      DW NONFUN
630C 570F      DW NONFUN
630E BC11      DW KLEFT      ;CTRL-G
6310 8A15      DW      LARROW  ;CTRL-H (BACK-ARROW)
6312 570F      DW NONFUN
6314 C311      DW      KBRGHT  ;CTRL-J
6316 570F      DW NONFUN
6318 4F14      DW      LNGEXT
631A DA0C      DW      COMAND   ; (CR), RETURN TO COMMAND MODE
631C D111      DW      KBDWN   ;CTRL-N
631E FA13      DW      TRGALL
6320 570F      DW NONFUN
6322 570F      DW NONFUN ;CTRL-Q
6324 BF10      DW      PNPNOF  ;CTRL-R
6326 9364      DW      CPYTXT  ;CTRL-S
6328 A664      DW      CPYTXF  ;CTRL-T
632A 1915      DW      RARROW  ;CTRL-U (FORWARD-ARROW)

```

```

632C 0D10      DW      CHBKND      ;CTRL-V
632E 5D13      DW      SRCMDE
6330 2113      DW      TRGMDE      ;CTRL-X
6332 CA11      DW      KBUP        ;CTRL-Y
6334 3716      DW      MOVROW      ;CTRL-Z
6336 DA0C      DW      COMAND      ; ESCAPE
6338 9013      DW      SRCALL
633A 5B0F      DW      COLMDE
633C BA0F      DW      COLTAB      ; 30
633E 570F      DW      NONFUN
6340 8C10      DW      FREEZE      ; SPACE
6342 0A16      DW      PNMHIT      ; !
6344 0A16      DW      PNMHIT      ; "
6346 0A16      DW      PNMHIT      ; #
6348 0A16      DW      PNMHIT      ; $
634A 0A16      DW      PNMHIT      ; %
634C 570F      DW      NONFUN
634E 570F      DW      NONFUN
6350 570F      DW      NONFUN
6352 6516      DW      SETQWK      ; )
6354 4314      DW      CLRCTR      ; *
6356 0D15      DW      QWIKI2      ; +
6358 9512      DW      NEGX        ; ,
635A 1464      DW      COPYBK      ; - ==> COPY HIRES SCREEN 2 TO SCREEN 1
635C DB12      DW      NEGY        ; .
635E 6312      DW      PDREST      ; /
6360 C414      DW      PGORGE      ; 0
6362 790F      DW      COLCHG      ; 1
6364 790F      DW      COLCHG      ; 2
6366 790F      DW      COLCHG      ; 3
6368 790F      DW      COLCHG      ; 4
636A 790F      DW      COLCHG      ; 5
636C 790F      DW      COLCHG      ; 6
636E 790F      DW      COLCHG      ; 7
6370 790F      DW      COLCHG      ; 8
6372 9914      DW      PSORGE      ; 9
6374 3864      DW      COPYTO      ; : ==> COPY HIRES SCREEN 1 TO SCREEN 2
6376 DD14      DW      QWIKIE      ; ;
6378 570F      DW      NONFUN      ; (
637A 570F      DW      NONFUN
637C 570F      DW      NONFUN      ; )
637E 570F      DW      NONFUN      ; ?
6380 570F      DW      NONFUN      ; @
6382 570F      DW      NONFUN      ; A
6384 ED0F      DW      BLITZ       ; B
6386 0510      DW      CLROLD      ; C
6388 570F      DW      NONFUN      ; D
638A 570F      DW      NONFUN      ; E
638C 570F      DW      NONFUN      ; F
638E BC11      DW      KBLEFT      ; G
6390 D811      DW      KBSTIL      ; H
6392 7B14      DW      ESORGE      ; I
6394 C311      DW      KBRGHT      ; J
6396 570F      DW      NONFUN      ; K
6398 3411      DW      LOCHIT      ; L

```

/usr/eric/cfm/PP16 PAINTER POWER 16 11/13/83 19:07:35

PP16 .ASM

```

639A 4610      DW      SWMODE      ; M
639C D111      DW      KBDWN       ; N
639E AD14      DW      EGORGE      ; O
63A0 A910      DW      PNTHIT      ; P
63A2 0E11      DW      QSTHIT      ; Q
63A4 F30F      DW      RABBIT      ; R
63A6 FF0F      DW      SNAIL       ; S
63A8 F90F      DW      TURTLE      ; T
63AA 7610      DW      DRAWON      ; U
63AC CD10      DW      VERHIT      ; V
63AE E510      DW      WRPHIT      ; W
63B0 7F12      DW      HOLDY       ; X
63B2 CA11      DW      KBUP        ; Y
63B4 6912      DW      HOLDX       ; Z
63B6 570F      DW      NONFUN      ; SQ (
63B8 570F      DW      NONFUN      ; BCK /
63BA 570F      DW      NONFUN      ; SQ )
63BC 570F      DW      NONFUN      ; ^
63BE 570F      DW      NONFUN      ; (
63C0 570F      DW      NONFUN      ; '
63C2 = 6400    ORG      $FF00 AND (#0+$FF)

```

```

;
;
; CCOPYBK & CCOPYTO - COPY FROM & TO HIRES PAGE 2: EXTERNAL CALL
; INDEPENDENT OF PP.
;
; -----
;

```

```

6400 205B64    CCOPYBK: JSR      SAVREG
6403 201464          JSR      COPYBK
6406 206D64          JSR      RSTREG
6409 60          RTS

```

```

;
640A 205B64    CCOPYTO: JSR     SAVREG
640D 203864          JSR     COPYTO
6410 206D64          JSR     RSTREG
6413 60          RTS

```

```

;
;
; COPYBK & COPYTO - COPY FROM & TO HIRES PAGE 2
;
; -----
;

```

```

6414 206E1C    COPYBK: JSR      LSTERA
6417 A920          LDA      #$20
6419 8563          STA      TO+1
641B A940          LDA      #$40
641D 8561          STA      FROM+1
641F A000          LDY      #$0
6421 8462          STY      TO
6423 8460          STY      FROM
6425 B160    COPYBL: LDA      [FROM],Y
6427 9162          STA      [TO],Y
6429 C8          INY
642A D0F9 ^6425    BNE      COPYBL
642C E661          INC      FROM+1
642E E663          INC      TO+1
6430 A561          LDA      FROM+1

```



```

6432 C960      CMP    #$60      ;REACHED END OF GRAPHICS PAGE YET?
6434 D0EF ^6425 BNE    COPYBL
6436 60        RTS

;
6437 AD        DB      $AD ;==FLAK

;
6438 206E1C    COPYTO: JSR    LSTERA
643B A920      LDA     #$20
643D 8561      STA     FROM+1
643F A940      LDA     #$40
6441 8563      STA     TO+1
6443 A000      LDY     #$0
6445 8462      STY     TO
6447 8460      STY     FROM
6449 B160      COPYTL: LDA     [FROM],Y
644B 9162      STA     [TO],Y
644D CB        INY
644E D0F9 ^6449 BNE     COPYTL
6450 E661      INC     FROM+1
6452 E663      INC     TO+1
6454 A563      LDA     TO+1
6456 C960      CMP     #$60      ;REACHED END OF GRAPHICS PAGE YET?
6458 D0EF ^6449 BNE     COPYTL
645A 60        RTS

```

```

;
;
; SAVREG & RSTREG - SAVE/RESTORE ZERO PAGE LOCATIONS.
;
;

```

```

645B 204AFF    SAVREG: JSR    IOSAVE      ;SAVE 6502 REGISTERS
645E A218      LDX     #$18
6460 A000      LDY     #$0
6462 B96000    SAVLOP: LDA     FROM,Y
6465 99E803    STA     REGS,Y
6468 CB        INY
6469 CA        DEX
646A D0F6 ^6462 BNE     SAVLOP
646C 60        RTS

;
646D A218      RSTREG: LDX     #$18
646F A000      LDY     #$0
6471 B9E803    RSTLOP: LDA     REGS,Y
6474 996000    STA     FROM,Y
6477 CB        INY
6478 CA        DEX
6479 D0F6 ^6471 BNE     RSTLOP
647B 203FFF    JSR     IOREST      ;RESTORE 6502 REGISTERS
647E 60        RTS

```

```

;
; CCPTXT & CCPTXF - COPY TEXT TO AND FROM TEXT PAGE 2. THESE ARE CALLED
; EXTERNALLY, INDEPENDENT OF PAINTER POWER.
;

```

```

647F 205B64    CCPTXT: JSR    SAVREG
6482 209B64    JSR     CPYTOK

```

```
; SOUND2 - VISUALIZE KB PRESS WITH A TICK.
```

```

;
;
64D8 A930      SOUND2: LDA    $$30      ;DELAY A LOT SO THAT NOISE OF KEY PRESS IS
64DA 20A8FC      JSR    ADELAY      ;MOSTLY OVER BEFORE TICK SOUNDS.
64DD A005      LDY    $$05
64DF A20D      LDX    $$0D
64E1 20E564      JSR    SOUNDZ
64E4 60      RTS

;
; SOUNDZ - GENERAL SOUNDER: X = FREQ, Y = DURATION
;
;
64E5 A940      SOUNDZ: LDA    $$40
64E7 20A8FC      JSR    ADELAY
64EA 8A      SNDZLP: TXA      ;GET FREQUENCY
64EB 20A8FC      JSR    ADELAY
64EE AD30C0      LDA    SPEAK
64F1 88      DEY
64F2 D0F6 ^64EA      BNE    SNDZLP
64F4 60      RTS

;
64F5 = 6500      ORG    $FF00 AND (*0+$FF)

;
= 6500      LSTBYT: EQU    *0      ;AREA TO STORE HIRES SCREEN BYTES TO BE RESTORE
;
6500      ENDCH: END

```

no ERRORS, 527 Labels, 7B40h bytes not used. Program LMA = 6500h.

ACLOOK 1F10	10/50	46#23					
ADDEVC 0E41	7/26	7/32	7#37				
ADELAY FCA8	1#29	32/18	55/ 4	55/14	55/16		
ADVNM1 1694	28/32	28#34					
ADVNM2 16B5	28/46	28#48					
ADVNOG 16CF	28/56	29# 3					
APATTS 1FA7	3/32	3/34	21/45	21/48	22/33	22/36	30/41
	30/44	49#15					
APLEXT 18C8	32/53	33/24	33/33	33/36	33/42	33#48	
APLNL2 1874	33/10	33#12					
APLNLO 18A8	33/19	33/21	33#35				
APLNP1 1835	32/36	32#43					
APLNP2 1844	32/44	32#49					
APLNPD 181F	32/27	32#35					
APLNQ5 1885	32/50	33/16	33#18				
APLNVI 186C	33/ 7	33# 9					
APLOC 1806	6/29	32#26					
APLOK1 1816	32/30	32#32					
APLOK2 182F	32/39	32#41					
APLXON 18B8	33/38	33#41					
ARBUZZ 1587	25/ 4	25/23	25/42	25#55	26/ 8	26/23	26/34
ARCHEK 15E9	25/53	26#45					

BASDEX 1B82	38/ 5	38/ 8	38#37					
BASDF 1B32	29/19	37/51	37/54	38/ 2	38# 6			
BASDSP 1B12	6/45	29/ 3	37#49					
BASH 0029	1#35	27/43						
BASL 0028	1#34	27/41	27/50					
BASXIN 1B4A	38/12	38/14	38#16					
BASYIN 1B71	38/27	38/29	38#31					
BASYOT 1B6A	38/25	38#28						
BBASEX 0074	1#53	21/33	25/10	26/10	28/ 9	30/42	30/45	
	34/11	35/32	35/43	35/47				
BBASEY 0076	1#54	25/14	26/12	28/13	30/43	30/47	34/13	
	35/34	35/49	35/53					
BCOLOR 1F7A	10/11	10/18	16/ 6	29/45	48# 9			
n BEGIN 0C00	2#35							
BKCOLR 1F7C	11/42	12/10	12/15	48#11				
BKLOOP 1D86	43#49	43/55	44/ 4					
BLITZ 0FED	11#23	24/29	51/45					
n BRSFLG 1F6F	47#51							
BSPTR 1F92	2/50	14/42	24/35	25/ 3	25/ 6	26/ 5	26/ 9	
	28/16	32/38	32/40	33/ 4	35/40	35/45	35/51	
	36/ 2	38/44	48#45					
BUSEX 1F46	17/12	18/55	18/56	33/40	35/ 4	35/ 8	35/26	
	35/31	37/34	37/42	47# 7				
BUSEY 1F47	17/13	19/33	19/34	33/47	35/ 7	35/10	35/27	
	35/33	37/33	37/41	47# 8				
CBASEX 0070	1#51	35/46	35/48	36/14	36/16	41/44	43/17	
CBASEY 0072	1#52	35/52	35/54	36/20	36/22	41/39	43/ 6	
CCOLOR 1F78	10/24	48# 7						
CCOUNT 1F5F	6/25	6/26	47#28					
n CCPTXF 6489	54# 4							
n CCPTXT 647F	53#54							
n CCPYBK 6400	52#28							
n CCPYTO 640A	52#33							
CBPNDF 0FB8	10/17	10#38						
CHBKND 100D	3/23	11#52	50/56					
CHBMAS 1042	12/19	12#22						
CHBOK 1015	11/53	11#55						
CHGFLG 1F7F	6/37	6/44	8/54	28/42	36/ 7	36/30	41/51	
	48#14							
CHRHIT 1F40	5/40	5/50	46#56					
CLRCTR 1443	22#48	51/21						
n CLRHL 1F79	48# 8							
CLROLD 1005	11#42	51/46						
CNTOVR 0DD8	6/36	6#48						
COLCH2 0F99	10#23	12/16	15/29	15/34	16/ 7			
COLCHG 0F79	3/25	10# 5	51/28	51/29	51/30	51/31	51/32	
	51/33	51/34	51/35					
COLCKB 0F82	10/ 6	10#10	32/48					
COLFLG 1F76	9/51	9/54	10/ 5	32/43	48# 3			
COLNDE 0F58	3/20	9#43	51/ 8					
COLMNK 0F73	9/49	9#53						
COLMOK 0F63	9/44	9#46						
COLORS 1F08	10/26	46#15						
COLTAB 0FBA	4/ 7	10#45	51/ 9					
COLTOK 0FC2	10/46	10#48						

COMAND 0CDA	4#21	23/18	50/47	51/ 6				
COPYBK 6414	15/53	51/24	52/29	52#41				
COPYBL 6425	52#49	52/52	53/ 2					
COPYTL 6449	53#15	53/18	53/23					
COPYTO 6438	15/27	51/37	52/34	53# 7				
COUT1 FDF0	1#28	37/ 4	37/17					
CPAGE1 0064	1#44	31/15	31/32	31/36	39/49	39/55	40/39	
	40/51	41/ 7						
CPAGE2 0066	1#45	31/24	31/34	31/37				
CPYFOK 64AB	54/ 5	54#23						
CPYTOK 649B	53/55	54/13	54#15					
CPYTXF 64A6	50/54	54#21						
CPYTXL 64BE	54#32	54/35	54/39					
CPYTXT 6493	50/53	54#12	54/22					
CSOURC 1F5C	3/29	21/ 6	47#24					
CSPEED 1F62	9/ 8	11/ 5	24/27	47#32				
CSTRTX 1F5D	2/52	23/41	24/11	28/50	47#26			
CSTRTY 1F5E	2/55	23/43	24/14	28/37	47#27			
CTARG 1F5A	3/27	22/12	47#20					
CTRLC 146F	23#17	50/37						
CTXFLG 1F83	23/11	36/41	48#26					
CUMODE 1F54	2/46	8/41	10/16	12/12	13/22	14/26	15/25	
	15/32	15/50	15/55	27/16	47#12			
CURCNT 1F60	6/48	11/12	47#30					
CURLOC 1F6C	16/41	17/53	18/40	19/18	33/20	47#47		
CURPTS 1F2F	36/ 3	36/26	42/18	43/ 2	43/35	46#40		
CURSET FC22	1#33	27/40	27/47	36/55	37/13			
CURSRC 1F5B	18/49	19/27	20/36	21/10	21/25	30/50	33/35	
	34/31	35/24	47#22					
CURSRX 0024	1#25	27/39	36/52	37/10				
CURSRY 0025	1#26	27/37	27/46	36/54	37/12			
CURTRG 1F59	22/29	30/53	47#18					
D1WRND 17B8	31/13	31#17	31/22					
DCBYTE 1C1C	38/21	38/36	38/52	39/13	39/27	39/34	40#21	
DCLOOK 1F18	10/52	32/47	46#24					
DCNCC1 1C38	40/32	40#35						
DCNDI6 1C6C	40/24	41# 9						
DCOUT1 1C3E	40/34	40#37						
DCOUT2 1C54	40/46	40#49						
DCOUT3 1C68	41/ 3	41# 6						
DCSUB1 1C30	40#30	40/36						
DCSUB2 1C4B	40#44	40/48						
DCSUB3 1C5F	40#56	41/ 5						
DECR1 0DFE	7/ 4	7# 9						
DECR2 0E01	7/ 2	7#10						
DECR3 0E04	6/55	7#11						
n DGRAPH C050	1#19							
n DHIRES C057	1#18							
DLOOP 1CF4	42#33	43/27						
DOBKND 101F	11/43	12/ 2	12# 9					
DOCPY 64B3	54/19	54#27						
DOFLG1 16E1	29/15	29#18						
DOFLG2 170E	29/14	29#36						
DOFLG3 16D3	4/15	29#11	30/26					
DOFNIN 16E0	29/13	29#16						

DOFTP2 16DD	29/12	29#15						
DOINI 0C07	2/37	2#39						
DONDRW 1D63	42/20	43/ 3	43#28					
DONER0 1CB8	41/18	41#52						
DONERA 1CAD	41/36	41#47						
DONERX 1CAE	41/20	41#48						
DONEXT 0D44	5/26	5#32						
n DONXYP 1BEE	39#35							
DPAGE1 17AC	13/28	13/44	13/51	14/ 9	15/18	29/24	29/27	
	29/30	29/33	31#10					
DPAGE2 17BA	10/15	12/45	13/ 9	14/25	14/50	18/12	18/28	
	19/10	19/43	27/15	29/38	29/41	29/44	29/48	
	29/51	29/54	30/ 2	30/ 5	30/ 8	30/11	31#20	
DRAWER 0EC7	7/33	7/42	7/45	8#39				
DRAWIT 1CCA	6/42	8/40	42#18					
DRAWNW 1067	3/48	12/30	12#42					
DRAWON 1076	13# 2	52/ 9						
DRWDO 1D1B	42/43	42/48	42/51	42#52				
DRWFLG 1F68	8/49	13/ 2	13/ 7	24/30	29/49	47#43		
DRWHL0 1FA6	24/31	33/15	49#11					
DRWNO 1D13	42/46	42#49						
DRWNM1 1D36	43/ 7	43# 9						
DRWNM2 1D4E	43/18	43#20						
DRWNPL 1D21	42/50	42#54						
DRWPAT 1D03	42/ 6	42/ 9	42#40					
DSBKND 1F7D	11/56	48#12						
DSCLF6 1F77	9/47	48# 5						
DSCOLR 1F7B	10/13	48#10						
DSSFL6 1F64	20/31	47#36						
DSTFL6 1F66	19/55	20/ 2	47#40					
DTRNOF 1080	3/47	4/24	13/ 3	13# 6	23/ 7	33/17		
DTRNON 107B	13# 4	24/32						
DUPMDE 1082	13/ 5	13# 7						
EGORGE 14AD	23#53	52/ 3						
ELOOP 1C82	41#25	41/46						
n ENDCH 6500	55#26							
ENTCKL 0E9C	8/15	8#20						
ENTER 0E53	7/25	7/28	7/35	7#43				
ENTNAD 0E94	8/ 5	8#16						
ENTNOK 0E6A	7/48	7#52						
EOR6X 1F8E	8/22	8/25	23/31	23/55	25/45	25/48	26/36	
	26/39	48#41						
EOR6Y 1F8F	8/26	8/29	23/32	24/ 2	25/49	25/52	26/40	
	26/43	48#42						
ERSFL6 1F30	2/41	6/40	8/52	41/17	41/49	43/34	46#41	
ESORGE 147B	7/54	23#26	51/52					
n EXTCL 0D07	4#53							
EXTCL1 0D19	5/ 3	5# 7	5/27					
EXTLOP 0D34	5#23	5/31						
EXTTBL 7800	5/25	49#25						
FIXX 126E	17/35	18# 7						
FIXY 1284	17/36	18#23						
FREEZE 108C	13#18	51/11						
FROM 0060	1#41	3/33	3/35	3/37	3/40	3/41	3/42	
	27/42	27/44	27/49	41/33	42/38	43/46	43/48	

	43/50	43/53	43/56	44/ 2	44/17	44/19	44/32
	44/34	44/35	44/38	44/40	44/41	44/48	45/ 2
	45/ 7	52/45	52/48	52/49	52/53	52/55	53/ 9
	53/14	53/15	53/19	53/33	53/43	54/16	54/24
	54/30	54/32	54/36				
FRZFL6 1F67	7/14	13/18	13/26	17/42	29/28	34/26	34/42
	47#42						
FRZON 1091	3/10	4/25	9/11	13#20	23/ 6		
FTRNOF 109D	13/23	13#25	17/17				
FUPMDE 109F	13/21	13#26					
GETNNX 193E	34/46	34#51					
GETNNY 1948	34/52	35# 2					
GETPAD 17D4	6/28	31#46					
GETPNZ 17DD	31/49	31#51					
GETVCX 1950	35/ 3	35# 5					
GETVEC 18C9	6/30	34# 3					
GETVEX 1958	34/32	35/ 6	35# 8				
n GMP12 17CA	31#34						
GPAE1 17C4	3/ 2	30/23	30/39	31#31			
GTVBYE 1964	34/ 7	34/16	34/23	35#12			
GTVDOK 18D6	34/ 6	34# 8					
GTVESC 18D3	34# 7	34/25					
GTVNFR 1914	34/27	34/29	34#31				
GTVNI 1934	34/43	34#45					
GTVNOR 1902	34/18	34#24					
GTVNGS 18EE	34/ 9	34#17					
HAVSUM 1CD2	42/19	42#21					
HBKGND 1D7E	12/17	15/30	43#45				
HCOLR 1F41	10/29	43/49	44/26	47# 2			
HCOLR2 1F42	10/30	10/34	10/36	43/52	44/28	47# 3	
HCOUNT 1F61	4/28	6/24	6/35	6/49	11/14	17/16	30/30
	34/ 5	47#31					
HGHCLR 1DF6	14/18	24/ 9	29/ 2	45#16			
HITFL6 1F81	6/ 2	48#20					
HITMIN 17F9	32/10	32#13					
HITTP 1F80	2/42	5/12	5/41	5/56	9/43	10/45	11/52
	19/51	20/27	21/ 2	22/ 8	22/56	27/33	28/ 3
	30/49	48#19	54/12	54/21			
HLDME 1F55	12/13	12/18	47#14				
HOLDX 1269	18# 5	52/14					
HOLDY 127F	18#21	52/12					
HPL0T 1DAC	42/53	44#24					
HPDS 1D9E	41/31	42/37	44#16				
INIFL6 1F6A	2/36	4/14	23/20	47#45			
INPLOK 0C90	3/38	3#41					
INPLOP 0C88	3#37	3/44					
INSCLC 0018	42/ 8	42#13					
INSSEC 0038	42/ 5	42#12					
IDREST FF3F	1#31	53/47					
IDSAVE FF4A	1#30	53/30					
IZNLCK 0EBC	8/31	8#33					
IZOKAY 0E7A	7/50	7/51	7/53	8# 3			
JMPIND 0D9E	6/15	6#21					
JMPLO 0D9F	6/13	6#22					
JMPTBL 6300	6/22	50#32					

KBDWN	11D1	16#27	50/48	52/ 2				
KBFRCH	1F84	2/44	9/ 3	9/ 6	17/14	17/26	17/45	48#30
KBLEFT	11BC	16#15	50/41	51/50				
KBLEXT	1231	17/15	17#18					
KBLOCD	1226	17/11	17#14					
KBHLD	124F	17/34	17#37					
KBNOCX	11F8	16/45	16#47					
KBNOCY	11FE	16/48	16#50					
KBNOX	1212	17/ 3	17# 6					
KBNOY	121B	17/ 7	17#10					
KBNTAD	1244	17/28	17#33					
KBOK	1209	16/42	16/53	17# 2				
KBOK1	1208	16/51	16#56					
KBRIGHT	11C3	16#19	50/44	51/53				
KBSTEX	1262	17/41	17/43	17#46				
KBSTIL	11D8	16#31	51/51					
KBSTUP	1232	16/15	16/19	16/23	16/27	16/31	17#24	
KBUP	11CA	16#23	51/ 4	52/13				
KBVE33	11F2	16/39	16#44					
KBVECH	11D8	16/17	16/21	16/25	16/29	16#34		
LAREN	15CE	26/19	26#33					
LARNVI	15AC	26/ 4	26#18					
LARROW	158A	26# 3	50/42					
LASTSX	1F39	41/22	43/29	46#49				
LASTSY	1F3A	41/23	43/32	46#50				
LBASX	1F33	37/50	37/53	38/11	38/18	46#45		
LBASY	1F35	37/56	38/ 4	38/24	38/33	46#46		
LBUSX	1F31	37/37	37/44	46#43				
LBUSY	1F32	37/35	37/43	46#44				
LFRZ0	0DBD	6#37	7/15					
LKMODE	1096	13/19	13#22					
LNGEXT	144F	22#56	23/17	50/46				
LNGOK	1457	23/ 2	23# 4					
LNMPIS	1F2C	36/ 4	36/27	41/19	43/36	46#37		
LNMPIT	1F37	39/ 2	39/ 6	39/ 8	46#47			
LOCAOF	115B	15/10	15#15					
LOCL6	1F6B	7/31	7/52	8/ 4	8/43	14/56	15/ 9	15/16
		16/38	17/10	17/33	18/37	19/15	24/24	29/25
		33/18	34/24	47#46				
LOCHIT	1134	14#56	51/55					
LOCHLD	1F95	24/25	33/ 9	48#48				
LOCOFF	114A	3/52	15/ 2	15# 9	23/ 9	24/26		
LOCON	1139	15# 3	33/11					
LOCUPD	115D	15/ 8	15#16					
LOCX	1FA4	15/ 3	15/12	49# 9				
LOCY	1FA5	15/ 5	15/14	49#10				
LOOP	0D49	4/42	5#39	5/54	6/46	9/12		
LPFRZ	0F0D	9/ 7	9#11					
LPNKR	0F06	9/ 4	9# 8					
LPNQST	0E2A	7/23	7#27					
LPNTVI	0E3C	7/30	7#34					
LPOK	0E11	6/51	7/13	7#16				
LSNMPT	1F38	38/41	38/45	38/47	46#48			
LSTBYT	6500	41/26	42/56	55#24				
LSTERA	1C6E	4/21	6/39	7/ 5	7/46	8/39	10/37	10/53

	12/11	13/37	14/10	14/30	14/44	15/24	15/49
	19/56	21/12	22/15	23/ 4	24/ 8	25/17	25/36
	26/15	26/30	26/53	28/ 6	35/29	41#17	52/41
	53/ 7						
MASTER 1195	12/14	12/22	13/40	15#49			
MAXPTS 1F2A	7/49	8/32	12/36	20/ 6	25/41	26/47	32/32
	46#35						
n MECHEK 0E23	7#24						
MEFLAG 1F69	7/24	7/34	12/29	12/43	20/ 8	23/26	23/53
	25/20	26/18	30/ 6	47#44			
n MLTCAL 0D2C	5#20						
MONITR 1166	12/20	13/47	15#24				
MOVLOP 165D	27#49	27/52					
MOVOK 163F	27/34	27#36					
MOVROW 1637	27#33	51/ 5					
MOVSTT 168A	7/41	25/16	25/35	26/14	26/29	28#29	
n MXMODE 1F56	47#15						
NEGNUM 1C02	39/46	39#53					
NEGX 1295	18#37	51/23					
NEGXL 12A9	18/38	18#47					
NEGY 12DB	19#15	51/25					
NEGYNL 12EF	19/16	19#25					
NGXKB 12B8	18/48	18/50	18#53				
NGXOK 12C2	18/51	19# 3					
NGXPAD 12D7	18/52	19#12					
NGYKB 12FE	19/26	19/28	19#31				
NGYOK 1308	19/29	19#36					
NGYPAD 131D	19/30	19#45					
NOACT 0D9D	6/ 3	6/10	6#18				
NOCHG0 0DC5	6/38	6#40					
NOCOP0 1171	15/26	15#28					
NOFRZZ 0F10	9/10	9#12					
NOHIT 0DA1	5/43	5/45	6#24				
NONFUN 0F57	9#36	50/34	50/35	50/36	50/38	50/39	50/40
	50/43	50/45	50/50	50/51	51/10	51/17	51/18
	51/19	51/39	51/40	51/41	51/42	51/43	51/44
	51/47	51/48	51/49	51/54	52/15	52/16	52/17
	52/18	52/19	52/20				
n NOPERA 141A	22#21						
NOREM 0E07	6/53	7#12					
NORREM 0E1E	7/17	7/19	7#22				
NOSHFT 1DB6	44/27	44#29					
NOTMNG 11A0	15/52	15#54					
NOUNF 10A7	13/24	13#29					
NUMMSK 1FA3	37/40	38/16	38/31	38/50	39/11	39/48	39/54
	40/26	49# 7					
NUMPTS 1F2B	8/33	12/39	20/14	22/25	26/22	26/48	32/33
	36/23	38/55	39/ 3	46#36			
NXFIX 12CC	19/ 4	19/ 6	19# 7				
NYFIY 1312	19/37	19/39	19#40				
OFFLAG 1FA2	8/47	9/ 2	38/13	38/28	42/49	49# 2	
ONMPTS 1F88	21/15	34/37	48#34				
OPTR 1F87	14/40	21/17	34/33	34/40	34/44	35/39	48#33
ORGLG 1F89	7/12	7/27	8/55	24/ 5	33/23	34/17	48#35
ORIGX 1F8A	23/56	34/19	48#37				

ORIGY	1F0B	24/ 3	34/21	48#38				
PAD18	1F4C	32/ 5	32/45	47#10				
PADFUL	1F48	31/51	32/28	32/37	47# 9			
PADVEC	1F50	32/16	33/26	33/28	33/39	33/43	47#11	
n PAGE	1F43	47# 4						
PAINT1	1DB9	27/ 4	44/29	44#32	44/51	45/ 5	45/10	
PAINT2	1DC3	27/ 5	44#38					
PAINT3	1DCD	27/ 6	44#44					
PAINT4	1DDE	27/ 7	44#53					
PAINT5	1DEF	27/ 8	45# 7					
PATTS	6600	49#14	49/15	49/16	49/17	49/18	49/19	49/20
		49/21	49/22	49/23	49/25			
PDREST	1263	17#52	51/26					
PGORGE	14C4	24# 8	32/56	51/27				
PNMEXT	1636	27/17	27#28					
PNMFL6	1F93	15/56	27/13	30/ 9	48#46			
PNMHIT	160A	3/ 9	16/ 2	27#10	51/12	51/13	51/14	51/15
		51/16						
PNMIND	1F94	15/36	27/19	27/20	48#47			
PNMSET	1624	15/37	27#20					
PNPNDF	10BF	3/55	4/23	13/39	13#47	50/52		
PNPNON	10B1	13#40	23/ 5					
PNTADS	1600	27# 4	27/24	27/26				
PNTFL6	1F6E	13/38	13/42	13/49	29/31	47#50		
PNTHIT	10A9	13#37	52/ 4					
PNTJMP	1DB7	27/25	27/27	44#30				
PORGX	1F8C	23/42	24/10	48#39				
PORGY	1F8D	23/44	24/13	48#40				
PREAD	FB1E	1#27	31/47					
n PRIMPG	C054	1#15						
PRSIGN	1BF2	38/20	38/35	39/26	39/33	39#43		
PSORGE	1499	23#41	24/48	51/36				
PTCNT	1FA1	8/56	42/24	42/52	48#56			
QSTFL6	1F70	14/37	14/48	29/36	34/28	47#52		
QSTHIT	110E	14#37	52/ 5					
QSTOFF	1129	3/49	14/38	14#47				
QSTUPD	112B	14/46	14#48					
QSTXEQ	1F85	2/45	5/52	6/50	7/22	24/34	24/47	32/49
		32/54	33/ 3	34/ 8	48#31			
QWIKI2	150D	24#45	51/22					
QWIKIE	14DD	24#21	24/45	51/38				
RABBIT	0FF3	3/17	11#26	52/ 6				
RAREN	1565	25/21	25#39					
RARNLK	15F1	26/46	26#48					
RARNVI	153F	25/ 2	25#20					
RARROW	1519	24#56	50/55					
RCTR1	1F02	4/30	7/ 3	7/ 9	46# 9			
RCTR2	1F03	4/31	6/56	7/10	46#10			
RCTR3	1F04	4/32	6/54	7/11	46#11			
n REENT	0CFE	4#40						
REGS	03E8	2# 4	53/34	53/42				
RELOOP	0EEB	8/42	8/44	8/46	8/48	8/50	8#53	
RELOPY	0DCD	6/41	6#43					
REMODE	1F00	30/27	46# 6					
REMTMP	1F01	4/27	6/52	30/28	46# 7			

RSET1	177E	3/30	4/56	5/21	30/25	30#37		
RSETUP	1762	4/41	30#21					
RSTLOP	6471	53#42	53/46					
RSTREG	646D	4/16	5/ 4	5/33	7/ 6	52/30	52/35	53#40
		53/56	54/ 6					
RTS1	0FB5	10/33	10#37					
SAMFLG	1F63	20/35	20/49	21/18	21/30	32/35	47#34	
SAVEX	1F28	16/34	17/ 4	46#33				
SAVEY	1F29	16/35	17/ 8	46#34				
SAVLOP	6462	53#33	53/37					
SAVREG	645B	2/39	4/40	4/53	5/20	52/28	52/33	53#30
		53/54	54/ 4					
SAVVEC	1965	6/32	35#19					
SB32	17F0	32# 8	32/12					
SBASEX	006C	1#49	20/39	21/14	21/46	21/49	28/ 8	28/18
		34/34						
SBASEY	006E	1#50	21/47	21/52	28/12	34/36		
SCSTRX	1F99	2/48	2/53	24/12	28/48	28/49	28/52	28/54
		37/49	37/52	38/10	38/17	42/25	42/27	45/17
		48#52						
SCSTRY	1F9B	2/47	2/56	24/15	28/34	28/35	28/39	28/41
		37/55	38/ 3	38/23	38/26	38/32	42/29	42/31
		45/18	45/19	45/21	48#53			
SDSTRX	1F9D	42/26	42/28	42/36	42/45	43/20	43/21	43/23
		43/25	43/28	48#54				
SDSTRY	1F9F	42/30	42/32	42/33	42/44	42/47	43/ 9	43/10
		43/12	43/14	43/30	48#55			
n SECPG	C055	1#16						
SETBUZ	1495	23/27	23/29	23#38	23/54			
SETNRM	FE84	1#32	36/39					
SETQL1	1672	28# 8	28/11					
SETQL2	1679	28#12	28/15					
SETQOK	166D	28/ 4	28# 6					
SETQWK	1665	28# 3	51/20					
SM97	0D8E	6/ 9	6#11					
n SMXPTS	1F2D	46#38						
SNAIL	0FFF	11#34	52/ 7					
SNDZLP	64EA	55#15	55/19					
SNMPTS	1F2E	20/40	20/45	21/20	21/34	26/ 7	28/19	32/41
		32/52	35/36	35/55	38/39	38/42	46#39	
SOUND	64D0	9/36	9/45	10/ 7	10/47	11/54	16/54	19/12
		19/45	19/53	20/29	21/ 4	22/10	23/ 3	23/38
		25/55	27/35	28/ 5	54/14	54#48		
SOUND2	64D8	5/55	55# 3					
SOUNDZ	64E5	23/35	23/47	54/50	55/ 7	55#13		
SPDHLD	1F90	24/28	33/12	48#43				
SPEAK	C030	1#20	55/17					
SPEEDS	1F20	11/11	46#25					
SPTR	1F58	14/41	24/36	32/51	33/ 5	34/10	34/15	35/19
		35/30	35/35	35/41	47#17			
SRCALK	13E1	21/31	21#36					
SRCALL	1390	21# 2	51/ 7					
SRCAN0	13C4	21/19	21#22					
SRCADK	1398	21/ 3	21# 5					
SRCAP	13C5	21/ 8	21#24					

SRCMDE 135D	3/16	20#27	51/ 2					
SRCMNN 138A	20/33	20#48						
SRCMOK 1365	20/28	20#30						
SRCNCP 1384	20/37	20#44						
SRSETB 13E2	21/11	21#41	30/52					
SSZDF 1B83	29/21	38#39						
SSZDSP 1B8A	14/43	20/41	21/21	21/35	32/42	36/ 6	38#42	
SSZEXT 1BA5	38/46	38#53						
STILUS 0D84	5/14	6/ 4	6# 7					
STKFLG 1F86	34/ 4	34/30	35/22	48#32				
STLOK 192B	34/38	34#41						
SVVNC1 19D2	36/ 5	36# 8						
SVVNC2 1A03	36/28	36#31						
SVVNP0 197F	35/25	35#29						
SVVNUP 19A2	35/23	35/28	35/37	35#42				
SVVNV1 19D3	35/21	36#10						
SWMNLK 105B	12/35	12#37						
SWMODE 1046	12#29	51/56						
TABLOP 0CBA	4# 2	4/12						
TAMFLG 1F65	8/30	12/34	20/ 7	20/20	22/21	26/45	32/26	
	47#38							
TAUPTS 1429	22/22	22#27						
TBASEX 0068	1#47	8/13	8/14	8/19	8/36	12/38	20/11	
	22/24	22/34	22/37	25/29	25/47	26/25	26/38	
	26/51	36/11	36/15					
TBASEY 006A	1#48	8/ 9	8/10	8/17	22/35	22/40	25/33	
	25/51	26/27	26/42	36/17	36/21			
TBSPTR 1F91	2/49	8/ 2	12/33	22/20	25/22	25/25	26/20	
	26/24	32/29	32/31	36/13	36/19	36/25	39/ 5	
	48#44							
TCTR1 1F05	7/20	22/49	46#12					
TCTR2 1F06	7/18	22/50	46#13					
TCTR3 1F07	7/16	22/51	46#14					
TEMP 1F7E	5/ 9	5/49	6/ 6	6/ 7	6/11	6/12	27/11	
	27/18	40/28	40/43	40/55	41/27	41/32	44/46	
	44/50	44/55	45/ 4	48#13				
TEMPX 1F3B	7/38	25/11	25/30	26/11	26/26	28/45	46#51	
TEMPY 1F3C	7/40	25/15	25/34	26/13	26/28	28/31	46#52	
TMPCPY 64CF	54/28	54/38	54#42					
TMPNUM 1F3D	4/54	5/ 8	5/48	6/14	40/27	40/35	40/38	
	41/21	41/25	41/34	41/35	42/22	42/54	43/26	
	46#53							
TO 0062	1#42	52/43	52/47	52/50	52/54	53/11	53/13	
	53/16	53/20	53/21	54/18	54/26	54/31	54/33	
	54/37							
TPTR 1F57	7/47	7/56	8/21	12/32	20/13	22/19	25/39	
	25/43	26/33	26/44	47#16				
TRGALL 13FA	22# 8	50/49						
TRGACK 1402	22/ 9	22#11						
TRGMDE 1321	3/13	19#51	51/ 3					
TRGME 134D	20/ 9	20/12	20#13					
TRGMNN 1357	20/ 4	20#19						
TRGMOK 1329	19/52	19#54						
TRSETB 142A	22/17	22#29	30/54					
TSZDF 1BA6	29/20	38#55						

TSZDSP 1BAD	8/37	12/46	20/15	22/26	26/52	32/34	36/29
	39# 3						
TSZEXT 1BC8	39/ 7	39#14					
TURTLE 0FF9	11#30	52/ 8					
TXBSE 000C	2#14	38/19	38/34				
TXBUF1 1A4C	36/56	37#22					
TXBUF2 1A9C	37/14	37#26					
TXCOLR 001E	2#24	10/14	29/47				
TXDRWF 0027	2#25	13/ 8	29/50				
TXFREZ 009E	2#19	13/27	29/29				
TXHLDX 0014	2#22	18/11	29/40				
TXHLDY 0016	2#23	18/27	29/43				
TXLIN1 0000	2#10	2/13	2/14	2/15	2/16	2/21	2/22
	2/23	2/24	2/25				
TXLIN2 0080	2#11	2/17	2/18	2/19	2/20	2/26	2/27
	2/28	2/29	2/30				
TXLOC 0094	2#18	15/17	29/26				
TXMODE 009E	2#29	12/44	30/ 7				
TXNEGX 0094	2#27	19/ 9	29/56				
TXNEGY 0096	2#28	19/42	30/ 4				
TXPNM 00A7	2#30	27/14	30/10				
TXPNT 00A7	2#20	13/43	13/50	29/32			
TXQST 000A	2#21	14/49	29/37				
TXSSZ 0025	2#16	38/48					
n TXTDSP C051	1#17						
TXTFLG 1F82	29/11	31/11	31/21	36/40	38/ 6	39/17	40/22
	48#23						
TXTSZ 001C	2#15	39/ 9					
TXUSD 0001	2#13	37/45					
TXVER 008A	2#17	14/ 8	29/23				
TXWRP 008A	2#26	14/24	29/53				
UPDSPD 0FD4	11# 5	11/24	11/27	11/31	11/35	33/14	
UPMODE 1069	12/41	12#43					
UPSNTS 0FDD	11/ 7	11# 9					
USEDEX 1B11	37/38	37#47					
USEDX 1AFB	29/18	37/36	37#39				
USEDSP 1AEB	35/42	36/10	37#33				
USEX 1F44	7/37	7/43	8/ 3	8/24	15/ 4	15/11	17/ 5
	17/29	18/43	18/44	33/27	34/12	34/20	35/ 9
	47# 5						
USEY 1F45	7/39	7/44	8/ 6	8/16	8/28	15/ 6	15/13
	17/ 9	17/30	19/21	19/22	33/32	34/14	34/22
	35/11	47# 6					
VERHIT 10CD	14# 2	52/10					
VERHPT 10D2	14# 4	33/ 8					
VEROFF 10D7	3/53	4/22	14/ 3	14# 6	23/ 8	24/23	
VERUPD 10D9	14/ 5	14# 7					
VISFLG 1F6D	7/29	8/45	14/ 2	14/ 7	23/28	24/21	24/56
	26/ 3	29/22	35/20	47#49			
VISHLD 1F96	24/22	33/ 6	48#49				
WARPOF 1CC4	42/ 4	42# 8					
WRAPAT 1CB9	14/31	15/40	16/ 5	42# 3			
WRCTL1 1A18	36/45	36#51					
WRCTL2 1A32	36/44	37# 9					
WRDN1 1A31	37/ 2	37# 7					

WRDN2 1A4B	37/15	37#20					
WRNONE 1A17	36/43	36#46					
WRPEXT 110D	14/27	14#32					
WRPFLG 1F71	14/16	14/23	14/28	16/ 3	29/52	47#53	
WRPHIT 10E5	14#16	52/11					
n WRPHLD 1F97	48#50						
WRPIND 1F98	14/29	15/39	16/ 4	28/55	42/ 3	48#51	
WRPOFF 10F2	14/17	14#22					
WRPON 10EA	3/54	14#18					
WRPUPD 10F4	14/21	14#23					
WRTEXT 1A04	3/ 3	30/24	36#39				
WRTLP1 1A23	36#56	37/ 6					
WRTLP2 1A3D	37#14	37/19					
WRTOP2 1A14	36/42	36#45					
XCHAR1 1F3E	3/12	3/15	3/19	3/22	4/ 4	9/46	10/49
	11/55	19/54	20/30	21/ 5	22/11	27/36	30/37
	30/56	33/13	46#54				
XCHAR2 1F3F	4/ 6	10/48	27/45	46#55			
XCRUIS 1F74	16/44	18/ 5	18/10	18/47	29/39	33/37	35/ 2
	47#56						
XNEG 1F72	19/ 3	19/ 8	29/55	34/45	47#54		
XNEGOF 12C7	3/50	19# 5	21/26				
XTAB1 6100	44/20	50# 3					
XTAB2 6200	44/33	44/39	50#15				
XTRNOF 1273	3/45	18/ 6	18# 9				
XUPMDE 1275	18/ 8	18#10					
XYEXT 1BEF	39/19	39#36					
XPRI 1BC9	37/46	39#16					
YCRUIS 1F75	16/47	18/21	18/26	19/25	29/42	33/41	35/ 5
	48# 2						
YESHIT 0D5C	5/44	5#47					
YESOK 0D72	5/53	5#55					
YNEG 1F73	19/36	19/41	30/ 3	34/51	47#55		
YNEGOF 130D	3/51	19#38	21/27				
YTAB1 6000	44/16	49#30					
YTAB2 6080	44/18	49#45					
YTRNOF 1289	3/46	18/22	18#25				
YUPMDE 128B	18/24	18#26					
YTAB2 6080							